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*Illustrated.

In normal years orders for rails are commonly placed during the winter for the following seasons' requirements and many

The Early Placing of Rail Orders

of the larger roads frequently do not determine the tonnage needed until after January 1. Last year these orders were placed somewhat earlier because of the rapid revival of the steel business. Now the steel companies are urging the railways to place their orders at once so that they may reserve their tonnage for delivery during the spring of 1917. Because of the unprecedented conditions in the steel mills many of the roads are following this advice and are now ordering rails in large quantities a full year before date of delivery. Nearly 450,000 tons of rail were ordered last week and inquiries were reported for at least 100,000 tons additional. This involves an outlay of nearly \$20,000,000. Thus 12 months before the date of delivery approximately one-seventh of an entire normal year's output was placed in one week. Such a condition is so unusual as to be of general interest. In addition to testifying to the congestion existing in steel mills it indicates the confidence with which railway men are viewing the future.

The track elevation work of the Chicago, Milwaukee & St. Paul, described elsewhere in this issue, is a notable example

Construction With Com- pany Forces

of railroad construction carried on entirely by company forces. This is an established practice on the St. Paul, which has been doing nearly all of its masonry construction and steel bridge erection with company forces, for many years either in groups of structures as on track elevation or in isolated bridges out on the line. This has necessitated a rather extensive organization and plant, but with a railroad system of this size sufficient work has been in progress from year to year to keep the organization intact, although there have been fluctuations in the size of the force as occur in nearly all departments of a railroad. That the availability of an organization of this kind for track elevation construction has proved valuable, is indicated by the fact that several other roads have found it desirable to create similar departments.

The dense traffic encountered in any project for track elevation in Chicago necessitates a close co-operation in the movement of traffic and the conduct of the construction work, and it is difficult to draw up a contract which will prove equitable under all contingencies which may arise. The tendency to handle this kind of work by company forces is the natural result. It has been carried out in some cases by placing train operation under the direction of the construction engineer within the limits of the track elevation work. Complication of conditions is not limited to this district however, for the movement of all construction trains is affected by conditions in other portions of the terminal. On the work described in this issue all filling material moved a distance of ten miles inside the city limits before reaching the site of the work. The material yard for lumber, reinforcing steel, etc., is located an equal distance from the work and numerous other conditions exist which would introduce difficult problems if a contractor was involved.

The Standard Code of the American Railway Association, prescribing rules for the operation of trains and the manage-

Discussions on the Standard Code

ment of block and interlocking signals has, probably, been revised and re-revised more laboriously and more minutely than any other document with which railway men have to deal. It has been discussed in committee so industriously that some committee members have large sections fixed in memory, verbatim. The work began more than 30 years ago and it is not yet finished. The articles on the subject now appearing in the *Railway Age Gazette* bring out some of the reasons why the work of revision may, with profit, be carried further. To officers active in the operating department these articles need no recommendation. Others will find their interest freshened by examining the views of an individual critic as distinguished from views which are a composite of the majority of a committee. H. W. Forman, the well-known former train-rule examiner on the Nashville, Chattanooga & St. Louis, has studied this whole subject of train rules more exhaustively than has any other writer on the

subject; and every position that he takes is based on views that have been tested in his own experience—not second-hand experience. C. C. Anthony, assistant signal engineer of the Pennsylvania Railroad, whose first article appeared March 17, takes up the subject where Mr. Forman leaves off. Dealing particularly with those rules which regulate the operation of fixed signals, he gives the very carefully formed conclusions which come out of the active—and often heated—discussions to which signaling practice has been subjected during the past ten years in the Railway Signal Association. Mr. Anthony has been in the thick of these debates, and in the present series of articles he has clarified every confused or confusing feature. Mr. Forman's criticism of rules 82-103 is printed this week, and his concluding article will appear in an early issue.

There never was in the history of the United States, a worse time than the present for a strike which would tie up all the railways of the country.

A Poor Time

For a Strike

The economic effects would be bad enough. But the worst feature of the threatened tieup is the effect it might have on the foreign relations of the country. Already we have an army in Mexico; and nobody can feel sure that it may not be necessary at almost any hour, to begin sending to that country a much larger body of troops. Our relations with certain European powers also are extremely delicate. President Wilson himself has publicly stated, having in mind this phase of our national situation, that he does not know any day what the morrow may bring forth. With the country facing such conditions no form of "preparedness" is more immediately essential to its welfare, than railway preparedness. In spite of this fact, it is menaced with a nation-wide railway strike. The heads of the four train service brotherhoods have denied that their organizations are committed either for or against arbitration. In the circumstances existing, such statements are more alarming than reassuring. As patriotic citizens they ought to be committed, and most emphatically committed, to arbitration. How are equipment and supplies to be got to our army in Mexico if the railways are to be tied up? And without equipment and supplies from the United States what would become of that army? In case additional troops are needed in Mexico, how, in case of a strike, are they to be got there? How, in case of war with any other country, could the situation be dealt with, if the railways were tied up, or were in a state of demoralization as a result of a strike? This would be a mighty poor time for a strike; and to call it under such conditions, especially when means for arbitration are available, would be little short of treason.

THE GRAVITY OF THE TRAINMAN'S RESPONSIBILITY

"A FULL and an anxious sense of responsibility" is required of every railroader, high or low, who has any duty in connection with the prevention of rear collisions. This is the law of the land, as laid down by the Supreme Court of the United States. The words will be found in a decision, by Justice McKenna, reported in another column of this paper, wherein the court pronounces a just condemnation on the courts in the State of Minnesota which had weakly approved the verdict of a jury which assessed damages against a railroad company for the death of a flagman in a rear collision, when the flagman, instead of going back to signal the following train, as he was in duty bound to do, had remained in the caboose!

Railroad companies have been mulcted in uncounted thousands of dollars for damages in cases of this character, where the employee was rightly chargeable with the whole

blame, but where the jurymen, easily confused as to the true apportionment of the responsibility, acted wholly according to their sympathies; and clarifying decisions like this one ought to be widely published. It is a hard thing to lay down the law to an offender who already has punished himself more severely than the State would punish, but it is a stern necessity; for the tendency of juries to take money from the rich and give it to the poor will never die out, and lawyers who encourage this spirit, and easygoing judges who approve it, are always with us. It is important to keep right principles in mind, even if, by reason of human sympathy, we consciously ignore them.

And it is to be observed that a flagman sitting in a caboose and not giving a thought to following trains, would have no moral right to claim damages for bodily injury, even if—as was not the case in this instance—blame attached also to the following train; for the duty of being wide-awake and alert is a fundamental element of his job. This would be the case if there were no flagging rule at all. On railroads fully block-signaled a trainman ought to be able to depend wholly on the block system for protection from collisions; but if the block system failed only once in a hundred years, it would still be the height of folly to sit in a caboose and incur a risk—however small—which is so utterly unnecessary. That the issues are not appreciated is, however, only too evident; for cases of trainmen killed or injured in cabooses by rear collisions which happen while they are sound asleep, are reported every year, and perhaps every month.

That word "anxious" gives a curious turn to this judicial utterance. And, in principle, the requirement to be anxious applies as much to enginemen, conductors, signalmen, dispatchers and superintendents as to flagmen. Can it be looked upon as a normal requirement? It is not to be wondered at that an accurate thinker, accustomed to searching out the whole truth in any subject that he takes up; one who, like a judge of the highest court, is familiar with the whole range of human sympathies, should use strong words when he sees the combined delicacy and gravity of the responsibility that is placed on the minds of men who must make safe the movement of five-hundred-ton trains at speeds of a mile a minute and faster; but is anxiety a normal state of mind? In the case of enginemen and train dispatchers the need of so arranging the duties and so qualifying the men as to do away with all anxiety has been a matter of a great deal of study; should not the same principle apply in the case of flagmen? And all the other classes also?

A brakeman—or an individual in any of the classes named—may well be anxious if he has anything less than 100 per cent of the knowledge of details and the devotion to duty which are required by his work; and as every person has his weaknesses the dictum of the learned justice is, to this extent, correct and applicable; but the best use that any railroad man can make of this admonition from the court will be to paste it in his rule book, to serve as a reminder; a reminder that constant and punctilious observance of the rules will make anxiety unnecessary. For the flagman himself, it is to be admitted that theory and practice are often very difficult to make consistent with each other; the flagman who says he cannot carry out the flagging rule in its extreme requirements, and still hold his job, enlists a good deal of sympathy. But so far as Judge McKenna is concerned, all flagmen may probably rest assured that if this unfortunate Great Northern man had done as well as he reasonably could, there would have been no such sweeping condemnation—though this is not saying that in such case the railroad ought to have paid damages.

With other classes the case is simpler. Take, for example, the locomotive runner. Writers of magazine stories and enginemen who like to "pose" have much to say about

the anxieties and the heroism of the man in the cab; but everyone who has observed the actual life of the men in the cab, knows that the runner who keeps his body and mind normal and who aims to follow the rules strictly may, so far as his duty is concerned, lead a pretty calm life. Especially is this true on block-signalized lines. The engine-man is, indeed, subject to worry over the foolhardiness of people who walk on the track, reckless drivers of automobiles at crossings, and such like annoyances; but these things cannot be got rid of by any anxiety as to duty-doing. The superintendent or the train despatcher may have cause for anxiety if he has taken risks to save time, or money; or has appointed or tolerated incompetent men, or in any respect has done less than the best that he knows how; but if he lives up to his best lights, Judge McKenna's dictum should have for him no terrors. It is his duty to avoid worry.

In ideal railroading the safety of train movement should involve as little anxiety as the movement of cash carriers on the wires in a dry goods store; the real anxiety comes when it is necessary to deal with labor unions, congressmen and the postmaster general!

TRUTH AND FICTION ABOUT THE "EIGHT-HOUR DAY"

SOME curious processes of reasoning are being used by and in behalf of the organizations of train service employees in their campaign to make the public believe they are demanding a real eight-hour working day rather than a \$100,000,000 increase in wages. A typical example is found in an article in Pearson's Magazine, a Socialist publication, entitled "The Truth About Railroad Wages." This article consists largely of charges that the railroads are misrepresenting the facts in the statements they have issued about the wage demands of the train service employees. It is interesting, therefore, to compare the railway statements with some of the statements made by the author himself.

He particularly objects to the showing that has been made by the railroads of the earnings of some of their highest-paid men, including engineers earning from \$300 to \$350 a month; but for his own purposes he uses the average wage of *all* railroad employees, which he gives as \$833 a year in 1915. This average is made up, as the railroads themselves have shown, of the wages of the 309,000 trainmen and enginemen now demanding a further increase, who average \$1,253 a year, as well as those of the 1,400,000 other employees, who average only \$685 a year. The author of this article says: "I thought the average wages of these so-called 'aristocrats of labor' would be somewhere up in the neighborhood of a thousand or fifteen hundred dollars, but it seems not." The railroads have not only shown how many men receive the high wages, but they have also shown the averages, and that the men whom they have called the "aristocrats of labor" average from \$1,023 for trainmen to \$1,771 for engineers. They have also shown that the wide discrepancy between these wages and those of the less favored classes of employees is largely due to the exorbitant demands that have been successfully made in the past by the same men who are again trying to obtain by force a disproportionate share of railway revenues. It is noteworthy that in all of the publicity material issued from the side of the employees involved in the present movement the average wages received by themselves have been carefully ignored!

The author also has a great deal to say about the safety of passengers, and by combining these statements with references to men who work 13, 14 and 15 hours a day he implies that passenger train and enginemen work such long hours. An introductory paragraph says: "Eight hours a day is long enough for men to work at the arduous, nerve-racking job of running trains at high speed. It is long enough for safety—

remember that if you ride on trains." Now, as a matter of fact, the demands pending do not apply to the passenger service, in which trains run at high speed, and the employees in which now work less than eight hours a day. The men who work long hours are in the slow freight service.

One of the arguments being advanced in behalf of the train service employees is that the railroads would not have to pay the enormous increase in wages which would be necessary to comply with their demands, if they would only reduce the tonnage of their trains and run them faster so that the crews could make 100 miles, the basis of a day's pay, in eight hours instead of ten hours. W. G. Lee, president of the Brotherhood of Railroad Trainmen, says that in this way the men would "do ten hours' work in eight hours." The article in question goes a step farther, and declares that a reduction of the hours of train service employees will not reduce their output because men who are not "over-worked" can do more and better work. This must mean that a man who works only eight instead of ten hours a day will feel so much better that he will in some way urge his train over a division in less time than at present without reducing the number of tons it hauls. If a reduction of hours in train service could be expected to produce that result the railroads would be the first to advocate it. It is to be feared, however, that the author of the article did not intend to use the word "output" quite so specifically. W. Jett Lauck, who was an expert witness for the western engineers and firemen in their recent arbitration, and who is now actively engaged in spreading their propaganda, takes a different view of the matter. In a recent magazine article he makes this frank admission: "To the extent to which the railroads may find it necessary to reduce train loads in order to maintain a speed of 12½ miles an hour, or an eight-hour day, it is now acknowledged that there may be a decline in train-mile earnings and in the output of railway employees."

The argument that a shorter working day would not mean reduced output may apply to some kinds of work, but the output of train crews depends only to a limited degree upon their personal efficiency. It depends rather upon the efficiency of the locomotive, the grades and curvature of the road, and upon the tonnage of the trains, all of which factors are controlled by the management rather than by the employees. If trains were run simply for the purpose of making mileage, instead of for the purpose of moving freight, it might be true that the crews could do the same work in eight hours as in ten; and they could earn a day's pay in a comparatively short time, indeed, if they were sent over the road at high speed in trains consisting only of an engine, a caboose and a "full crew." The difficulty about such an arrangement would be that it would not produce the money with which to pay the wages.

Mr. Lauck argues, however, that the train employees have already earned an increase in pay or a reduction of hours, for he says: "There will be earnings remaining, however, arising from the increased work and productivity of employees in the past, sufficient to compensate the railroads for any difference in labor costs. Although employees have in recent years received some wage advances, they have by no means had a fair share in the revenue gains arising from their increased productivity. They have given to the railroads in increased work and productive efficiency, or in lower labor costs, more than they have received from the railroads. The movement for an eight-hour day is, therefore, a consistent request by transportation employees to share in past gains in productive efficiency for which they have not been remunerated."

The most important way in which railroad efficiency has been increased has been by increasing the train load. This has been made possible by the expenditure of capital for larger cars and locomotives and for the reduction of grades, etc., rather than by the efforts of the employees. It would be

a strange procedure, indeed, to reverse the process, reduce the train loads, and thereby reduce railroad efficiency for the benefit of employees who have already received increases in their average wages amounting to nearly 40 per cent in ten years, while the wages of other classes of employees have increased only 25 per cent, and while the percentage of return on the capital invested has actually decreased.

Another statement in which a half-truth is made to perform the work of falsehood is that "3 per cent of the roads in western territory run on the eight-hour basis and 57 per cent of the roads in southeastern territory run on the same basis.

Perhaps because of the fact that they are run on the eight-hour basis their prosperity is assured and sound." A list of 18 roads is given. No evidence is presented as to

basis for a day's pay for the western enginemen, as it is to say that the roads in question are operated on an eight-hour basis. The railroads mentioned in the article which have a basis of less than ten hours in any class of service are shown in the first table, which also shows in detail what the basis is, and to what classes of employees it applies.

The roads in western territory, shown in the table on the following page, also have a basis of less than 10 hours per day on certain districts due to local conditions.

The Southern Pacific also has a basis of 12½ miles per hour on certain districts, but its bases of payment are so complicated as to make it difficult to describe them in the table.

It will be seen from the tables that the enginemen are

ROAD	WESTERN TERRITORY		REMARKS
	THROUGH FREIGHT <i>Train and Enginemen</i>	LOCAL FREIGHT <i>Train and Enginemen</i>	
El Paso & Southwestern System.....	100 miles or less 8 hours or less	100 miles or less 8 hours or less	Overtime computed and paid on basis of 12½ miles per hour.
Sunset-Central Lines (except H. & T. C.)..	<i>Enginemen</i>	<i>Enginemen</i>	<i>Enginemen</i>
	100 miles or less 8 hours or less	100 miles or less 8 hours or less	Time card schedule of train governs limit of a trip with minimum speed basis of 12½ miles per hour. Flat rates paid for overtime.
	<i>Trainmen</i>	<i>Trainmen</i>	<i>Trainmen</i>
	100 miles or less 8½ hours or less	100 miles or less 10 hours or less	Time card schedule of train governs limit of a trip with minimum speed basis of 12 miles per hour in through freight and 10 miles per hour in local freight service. Flat rates paid for overtime.
Houston & Texas Central.....	<i>Enginemen</i>	<i>Enginemen</i>	<i>Enginemen</i>
	100 miles or less 8 hours or less	100 miles or less 8 hours or less	Overtime computed on basis of 12½ miles per hour and paid flat rate.
	<i>Trainmen</i>	<i>Trainmen</i>	<i>Trainmen</i>
	100 miles or less 8 hours or less	100 miles or less 10 hours or less	Overtime computed in through freight service on basis of 12½ miles per hour and paid flat rate. Overtime in local freight service after 10 hours and paid flat rate.
SOUTHEASTERN TERRITORY (ENGINEERS)			
Atlanta, Birmingham & Atlantic.....	100 miles or less 8 hours or less	100 miles or less 10 hours or less	Overtime computed on speed basis of 12½ miles per hour in through freight and 10 miles per hour in local freight service and paid flat rates.
Atlantic Coast Line.....	100 miles or less 8 hours or less	100 miles or less 10 hours or less	Overtime computed on speed basis of 12½ miles per hour in through freight and 10 miles per hour in local freight service and paid flat rates.
Central of Georgia.....	100 miles or less 8 hours or less	100 miles or less 10 hours or less	Overtime computed on speed basis of 12½ miles per hour in through freight and 10 miles per hour in local freight service and paid flat rates.
Charleston & Western Carolina.....	100 miles or less 8 hours or less	100 miles or less 10 hours or less	Overtime computed on speed basis of 12½ miles per hour in through freight and 10 miles per hour in local freight service and paid flat rates.
Florida East Coast.....	100 miles or less 6½ hours or less	100 miles or less 8½ hours or less	Overtime computed on speed basis of 15 miles per hour in through freight and 12 miles per hour in local freight service and paid flat rates.
Georgia	100 miles or less 8 hours or less	100 miles or less 10 hours or less	Overtime computed on speed basis of 12½ miles per hour in through freight and 10 miles per hour in local freight service and paid flat rates.
Louisville & Nashville.....	100 miles or less 8 hours or less	100 miles or less 10 hours or less	Overtime computed on speed basis of 12½ miles per hour in through freight and 10 miles per hour in local freight service and paid flat rates.
Nashville, Chattanooga & St. Louis.....	100 miles or less 8 hours or less	Day has specified time limits, 11, 12 and 14 hours per day	Overtime computed on speed basis of 12½ miles per hour in through freight and paid flat rates. In local freight no overtime allowed until arbitrary time limit of day is exceeded; paid at flat rates.
Norfolk Southern	100 miles or less 8 hours or less	100 miles or less 10 hours or less	Overtime computed on speed basis of 12½ miles per hour in through freight and 10 miles per hour in local freight service and paid flat rates.
Seaboard Air Line.....	100 miles or less 8 hours or less	100 miles or less 10 hours or less	Overtime computed on speed basis of 12½ miles per hour in through freight and 10 miles per hour in local freight service and paid flat rates.

their prosperity, however. Some of them, as a matter of fact, are prosperous and some are very far from being so.

There are some roads in western and southeastern territories which have a basis of eight hours or less in certain classes of service, or for certain classes of the train employees, or in certain districts, because of local conditions or influences, or because these roads have been unable to withstand the demands of organized labor in the past. But there is not a single road in any territory which has in all train service either a real eight-hour day or the "eight-hour basic day" now demanded by the train employees' organizations. It would be as true to say that all of the roads in the east run on a five-hour basis, because their passenger engineers and firemen have such a basis, or that the western roads are on a six and two-thirds-hour basis, because 6 hrs. 40 min. or less, or 100 miles or less, is the

the only employees that are on a basis of eight hours or less per day in both through and local freight service even on all of the roads mentioned in western territory. The trainmen have various bases, ranging from eight hours to ten hours or less per day. In other classes of service (passenger, work, helper, etc.) the basis of the day's work ranges from five to twelve hours.

In southeastern territory the only freight service having eight hours or less as the basis of a day's work is through freight service. All the local freight service in the territory is on a basis of ten hours or less, with the exception of that of the Florida East Coast, which has a basis of 8½ hours or less, with a speed basis of 12 miles per hour, and that of the Nashville, Chattanooga & St. Louis, which has arbitrary time limits for a day's work ranging from 11 to 14 hours per day. On the Florida East Coast the men are paid on a monthly

basis and must put in the designated number of hours each day before overtime accrues.

On branch lines in the southeast the bases for a day's work vary, and are in a majority of cases governed by arbitrary time limits. The hours range from a trip limit of 6½ hours to a day of 14 hours. It will be noted also that on the roads mentioned overtime is paid for on approximately the pro rata rates, as is the custom on other roads throughout the country. On none of the above roads is time and a half paid for overtime, and nowhere in the country are the hostlers on the eight-hour basis. Only in some yards on one road in eastern territory, the New Haven, is there an eight-hour day for yardmen.

The fact that a few roads in a part of their service pay a day's wage for eight hours or less is of little significance in relation to a demand on the part of all the freight train employees on all the roads of the United States for an eight-hour basis. The length of a day's work in train service depends, generally speaking, on the length of time required to run a train from one terminal to another. Certain classes of traffic must be handled rapidly and are loaded so lightly that they can be run over a division almost in passenger train time. Other classes of traffic, such as low grade freight, need not be moved so rapidly and by their very nature must be handled in large units, or it would not pay to haul them at

more than eight hours would have to be paid for overtime, but each man who worked less than eight hours would have to be paid for a full day. The railroads now pay for all overtime, either at the pro rata rate per hour or in the form of excess mileage, whichever produces the greater amount.

FLORIDA EAST COAST

THE Florida East Coast is unique in a number of ways. The project was conceived, financed and built by the late Henry M. Flagler. The road runs from Jacksonville along the east coast of the peninsula of Florida to the extreme southeastern end and is carried on a causeway to Jewfish Key and follows a string of keys to Key West. One of the last business acts of Mr. Flagler's life was the authorization of the inauguration of freight steam ferry service between Key West and Cuba. Before the inauguration of this service the Florida East Coast earned almost as much from passenger service as from freight service. In freight service the road carried a greater tonnage of oranges and lemons than it did of coal, and of vegetables than it did of iron, machines and metals, nearly twice as many tons of vegetables as of lime, cement and brick.

In 1915 total operating revenues, exclusive of earnings

ROAD	THROUGH FREIGHT <i>Train and Enginenen</i>	LOCAL FREIGHT <i>Train and Enginenen</i>	REMARKS
Canadian Northern	100 miles or less 9 hours or less	100 miles or less 9 hours or less	
Canadian Pacific	<i>Trainmen</i> 100 miles or less 9 1/9 hours or less	<i>Trainmen</i> 100 miles or less 9 1/9 hours or less	Speed basis 11 miles per hour except on Laggan sub-division where speed basis is 10 miles per hour.
Denver & Rio Grande.....	<i>Enginenen</i> 100 miles or less 8½ hours or less	<i>Enginenen</i> 100 miles or less 8½ hours or less	Speed basis 12 miles per hour applies only on certain runs on Utah Lines.
Grand Trunk Pacific.....	<i>Train and Enginenen</i> 100 miles or less 9 hours or less	<i>Train and Enginenen</i> 100 miles or less 9 hours or less	Speed basis 11 miles per hour.
St. Louis, Brownsville & Mexico.....	<i>Train and Enginenen</i> 100 miles or less 8 hours or less	<i>Train and Enginenen</i> 100 miles or less 10 hours or less	<i>Train and Enginenen</i> In through freight service overtime is computed on basis of 12½ miles per hour and paid on basis of 10 miles per hour; that is, overtime accrues after 8 hours but is paid at 1/10 of daily rate instead of ½ of daily rate.
San Antonio & Aransas Pass.....	<i>Train and Enginenen</i> 100 miles or less 8 hours or less	<i>Train and Enginenen</i> 100 miles or less 10 hours or less	<i>Train and Enginenen</i> Overtime computed on speed basis of 12½ miles per hour in through freight and 10 miles per hour in local freight service and paid at flat rate.
Atchison, Topeka & Santa Fe, Coast Lines.	<i>Train and Enginenen</i> 100 miles or less 8½ hours or less	.....	<i>Train and Enginenen</i> Through freight service computed and paid on basis of 12 miles per hour. This applies only on Albuquerque and Arizona Divisions; all other divisions, 10 miles per hour.

all. On the roads in the southeast a large percentage of the traffic consists of fruits and vegetables, or other light and perishable freight that can and must be moved promptly and in small train loads. Some of the western roads mentioned also handle a large percentage of this class of traffic. In such a case it is less difficult for a road to maintain an eight or nine-hour basis because the contracts with the brotherhoods require that the men shall be paid for a minimum of 100 miles, no matter how few hours they work. It is an entirely different proposition to ask a road that has a large percentage of low grade freight to handle its traffic in shorter trains and more of them, which would require the employment of additional crews, or to pay a full day's pay for the first eight hours and a 50 per cent higher rate per hour for the remaining time.

Another misleading statement in the article is that the amount of overtime that would have to be paid under the proposed time and one-half rule would be very small. To illustrate this the writer says that during a recent period three-quarters of the through freight trains on western roads averaged 116 miles in 8 hr. 24 min. and that, therefore, each man would be paid for only 24 minutes of overtime. The trouble with this statement is that overtime is not paid for averages, but for actual instances. Each man who worked

from the ferry, amounted to \$5,393,000, a decrease of a little less than 1 per cent compared with 1914; but freight revenue amounted to \$2,737,000, an increase of \$143,000, or over 5 per cent, over 1914. Passenger revenue amounted to \$1,905,000, a decrease of \$171,000, or over 8 per cent. Presumably in the present fiscal year the passenger revenues will show a very considerable percentage of gain even over 1914. Much of the Florida East Coast's passenger business is made up of winter tourist travel to Ormond, Palm Beach, Miami and other east coast resorts, and in the winter of 1914-15 war profits had not begun to bulk large. If current reports do not exaggerate, the present winter, however, will form a striking contrast.

Operating expenses in 1915 amounted to \$3,338,000, a decrease of \$378,000, or 10 per cent. Nearly half of this saving was made in transportation expenses, despite the fact that with a passenger mileage of 69,390,000, a decrease as compared with the previous year of 6,685,000, the passenger-train mileage was 1,320,000, an increase of about 14,000 miles, the ton mileage handled was 163,705,000, an increase of 14,184, due entirely to a longer average haul, the number of tons carried being less in 1915 than in 1914. The average length of haul in 1915 was 185 miles, as against 164 miles in 1915. The average revenue per ton per mile was

1.672 cents in 1915 and 1.735 cents in 1914. The total tonnage of revenue freight in 1915 was 886,000; in 1914, 911,000. Of this tonnage lumber furnished 150,000 tons in 1915 and 163,000 tons in 1914; lime, cement and brick furnished 103,000 tons in 1915 and 54,000 tons in 1914; vegetables furnished 83,000 tons in 1915 and 90,000 tons in 1914; pineapples furnished 18,000 tons in 1915 and 17,000 tons in 1914; citrus fruits furnished 52,000 tons in 1915 and 47,000 tons in 1914; coal furnished 43,000 tons in 1915 and 33,000 tons in 1914.

The Florida East Coast has \$10,000,000 common stock, \$12,000,000 first mortgage bonds and \$25,000,000 income bonds, with \$350,000 equipment trust certificates. Its annual report does not include a profit and loss statement and the net shown in the table at the end of these remarks is after the payment of interest on the first mortgage bonds and 4 per cent on the income bonds. The balance sheet shows a profit and loss surplus of \$221,900. There are loans and bills payable of \$2,040,000, with cash on hand amounting to \$245,761. Of the loans and bills payable about \$1,500,000 was contracted during the fiscal year 1915. During the year a 49-mile extension into the Kissimmee valley was completed and the work of replacing temporary trestles with concrete bridges was continued, leaving now only one important opening to be bridged with concrete.

The Florida East Coast is the first road in the East to use oil in place of coal as fuel for any large proportion of its locomotives. With the high class of passenger traffic which the Florida East Coast serves this change ought to be particularly popular. The freight-car ferry service between Key West and Cuba has been in operation only half of the year. The earnings of the service were \$121,000, and expenses \$81,000, leaving a net of \$40,000. The first boat put in operation is making daily round trips and has been from the first taxed to its capacity, which is 30 loaded freight cars. Another boat is being built and will be put in service as soon as completed.

The following table shows the principal figures for operation in 1915 as compared with 1914:

	1915	1914
Mileage operated	745	696
Freight revenue	\$2,736,598	\$2,593,683
Passenger revenue	1,904,928	2,075,543
Total operating revenues	5,392,782	5,397,646
Maintenance of way and structures	697,683	870,095
Maintenance of equipment	678,192	743,982
Traffic expenses	103,826	97,205
Transportation expenses	1,653,866	1,815,742
Miscellaneous expenses	39,044	62,993
General expenses	201,433	126,197
Transportation for investment—Cr.	36,207	.....
Total operating expenses	3,337,836	3,716,214
Taxes	236,090	239,717
Operating income	1,818,856	1,441,715
Gross income	1,858,856	1,441,715
Net income	213,319	116,214

NEW BOOKS

Proceedings of the American Electric Railway Engineering Association, 1915. 623 pages. 166 illustrations. Size 6 in. by 9 in. Bound in cloth. Published by the association, E. B. Burritt, secretary, 8 West 40th street, New York.

These proceedings contain the complete report of the thirteenth annual convention of the association held in San Francisco last October. The committee reports include a number of special interest to electrical engineers of steam railroads, including the reports of the committees on Lightning Protection; Power Distribution; Block Signals; Equipment; Power Generation, and Heavy Electric Traction. The last named report is largely given over to a study of modern electric locomotives and with it there are given 37 views and plans of American and foreign electric engines. Appendix A of the report on Block Signals is a bibliography of recent articles on signaling which have appeared in the *Railway Age Gazette*, the *Electric Railway Journal*, the *Signal Engineer*, and other papers.

Letters to the Editor

HARK! THE MILLENNIUM

SAN FRANCISCO, Cal.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Expecting friends to reach San Francisco on Southern Pacific No. 5, February 23, I decided to go out to Richmond to meet them, thus relieving them of all anxiety as to how to get around in this city. Upon my arrival there I asked the ticket agent whether or not No. 5 was on time. He informed me that he thought it was; that it was a little early, but he would know definitely in about 20 minutes. I told him not to bother; that I would watch the train bulletin board. After getting supper I bought an evening paper and sat down in a clean, well lighted waiting room to await my train. Soon thereafter this fine looking, neatly dressed and cleanly shaven gentleman, whom I took to be also the operator, came out of the office, came up to me and informed me that No. 5 was on time. He also volunteered the information that there was a local passenger train running only ten minutes ahead of my train and suggested that I take care not to mistake it for No. 5. This caution seemed quite superfluous, for all S. P. trains have most excellent train indicators prominently displayed on their engines back of the headlight. The passenger station at Richmond is the "last word." It is made of brick and concrete and "cleanliness" and "comfort" are emblazoned all about it. The windows, floors, walls and toilets are immaculate. It is exceptionally well lighted at night, and there is a telephone booth.

In a court outside there is a large bulletin board with the numbers of all passenger trains painted thereon, beginning with the first one after midnight. It shows the points from and to which they are run, time due to arrive or leave, and (in chalk) whether or not on time; also whether or not such trains have passed. The year, month and date are painted on separate squares of tin and so arranged that all such information can be given without using chalk.

The station sign, "RICHMOND," is in ground glass letters and is kept brightly illuminated at night. The platforms are lighted by dozens of soft, white globed incandescent lamps, handsomely grouped in clusters.

Lest someone may insist that I was in a trance, or a heavenly vision or something of that sort, instead of still on this mundane sphere, I will add that the engineman of the train on which I traveled to Richmond, and which left Oakland Pier at 5:27 p. m., invariably sounded four very long blasts of the engine whistle for all highway crossings, instead of two long and two short. And, while at Richmond, I noticed that only one of three passenger trains going by there had a lighted red lantern on the rear platform. The Southern Pacific is a great philanthropic institution. At least I assume so, since the conductor of No. 5 did not call on me for my ticket.

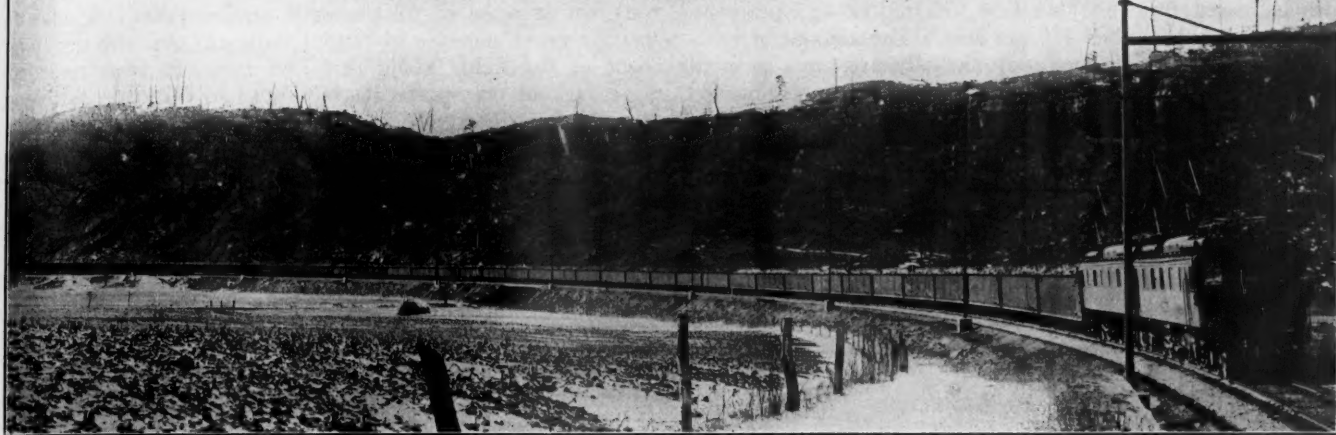
Moral: The solution of the present labor controversy is quite simple: Reduce the pay of efficient stationmen who go out of their way to make their company popular, and use this money to increase the wages of trainmen and enginemen who—?

HARRY W. FORMAN.

ENGLISH RAILWAY ENLISTMENTS.—The total number of North-Eastern railwaymen enlisted up to January 25, 1916, was 10,023, representing 18.4 per cent of the company's standard staff. In addition to these direct enlistments 16,183 men have been enrolled under Lord Derby's scheme, making a total of 26,208 enlisted and attested, or 29.71 per cent of the staff. A much higher percentage of the staff of military age—19 out of every 20 eligible men—on the Northeastern have offered themselves for service.

The Operation of the Norfolk & Western

A Description of the Methods Adopted to Develop
This Property and Operate It Unusually Successful



In the fiscal year ending June 30, 1915, the Norfolk & Western converted a decrease in total operating revenue of \$1,663,265.77 or 3.73 per cent, into an increase in net revenue from railway operations of \$640,325.56, or 4.41 per cent, while increasing the expenditures for maintenance of way \$739,461.98, or 14.49 per cent, and reducing the number of cars and locomotives awaiting repairs nearly 25 per cent. The past few years have offered a number of instances where net revenues have been maintained in the face of decreasing business by retrenchment in maintenance expenditures, but an example like that of the Norfolk & Western, where 93 per cent of the decrease in revenues was offset by a reduction in transportation expenses alone, and where at the same time the operating ratio was reduced from 67.49 per cent to 64.74 in the face of declining revenues is most unusual. The fact that this could be done indicates not only a high degree of efficiency during this period, but also during preceding years, for a property must be in excellent condition to enable such a record to be made.

An even more unusual showing has been made during the first seven months of the present fiscal year. For this period ending January 31, 1916, the operating revenues increased \$7,538,458.44, or 37 per cent over these for the same period one year ago, while the net operating revenues increased \$5,754,632.63, or 69 per cent, and the net income increased \$5,474,133.01, or 96 per cent. During these seven months an increase of 37 per cent in freight traffic was handled, with an increase of only 10 per cent in transportation expenses. The reduction of the operating ratio from 66.00 to 56.90, is the measure of the results secured during this seven months period. During the month of December alone an increase of 61 per cent in freight traffic was handled with an increase of only 17 per cent in transportation expenses, while the net income increased 138 per cent and the operating ratio fell from 65.84 for December, 1914 to 56.65 for this month.

It is the purpose of this article to describe the more important measures which have been taken to develop this property. Before going into detail the fact should be emphasized that the Norfolk & Western has enjoyed an unusually progressive as well as capable management during recent years, as indicated by the number of important developments to which it has been a pioneer. Among these may be noted the fact that this road was the first to adopt the

Mallet locomotive for general road service on lines of low grade, employing this type of engine very largely for heavy tonnage trains today. The Norfolk & Western also placed in service the largest steel coal pier on the Atlantic seaboard at Norfolk in 1913, which differed radically in the method of operation from any then in service, although others have since then been built similar to it. This road was the first, and still is, the only road to use 180,000-lb. capacity gondola cars in general coal service, placing 750 in use in 1914 and ordering 1,000 more late in 1915. It was also the first to electrify a portion of its main line for the purpose of effecting economies in the operation of heavy freight trains, 30 miles of the line being converted to electric operation on July 1, 1915.

THE PROPERTY

The Norfolk & Western comprises 2,050 miles of line, extending from Norfolk, Va., through Roanoke, and the Pocahontas coal fields, of West Virginia to Columbus, Ohio, with branches to Cincinnati, Ohio; Bristol, Tenn.; Hagerstown, Md., and other points. With the exception of one short section of 20 miles the main line is double track throughout and work is now under way on the construction of an additional main track on this remaining section.

On October 1, 1896, the Norfolk & Western emerged from a receivership of 18 months' duration. On that date the road owned 1,570 miles of line and 54 miles of second track, 375 locomotives and 16,163 freight cars. The gross earnings per mile of line for the previous year ending December 31, 1895, were \$6,154.20, the net earnings \$1,362.07, and the total deficit \$964,959.25. In the 19 years to June 30, 1915, the mileage of main line increased 459 miles, and of second track 470 miles. In this same period 682 locomotives have been added, an increase of 168 per cent in number, and of 385 per cent in tractive power, while the number of freight cars had increased 31,320, or 196 per cent., and their capacity 436 per cent. The gross earnings per mile of line for the year ending June 30, 1915, were \$21,051.96, or 242 per cent greater than for the year ending December 31, 1895, while the net operating revenues were \$7,421.94, an increase of 444 per cent. It is interesting to note that the *net* revenues for the year ending June 30, 1915, are nearly 25 per cent greater than the *gross* revenues of 19 years before, while the deficit

of 1895 had been converted into a net income of \$10,-409,904.86.

THE TRAFFIC

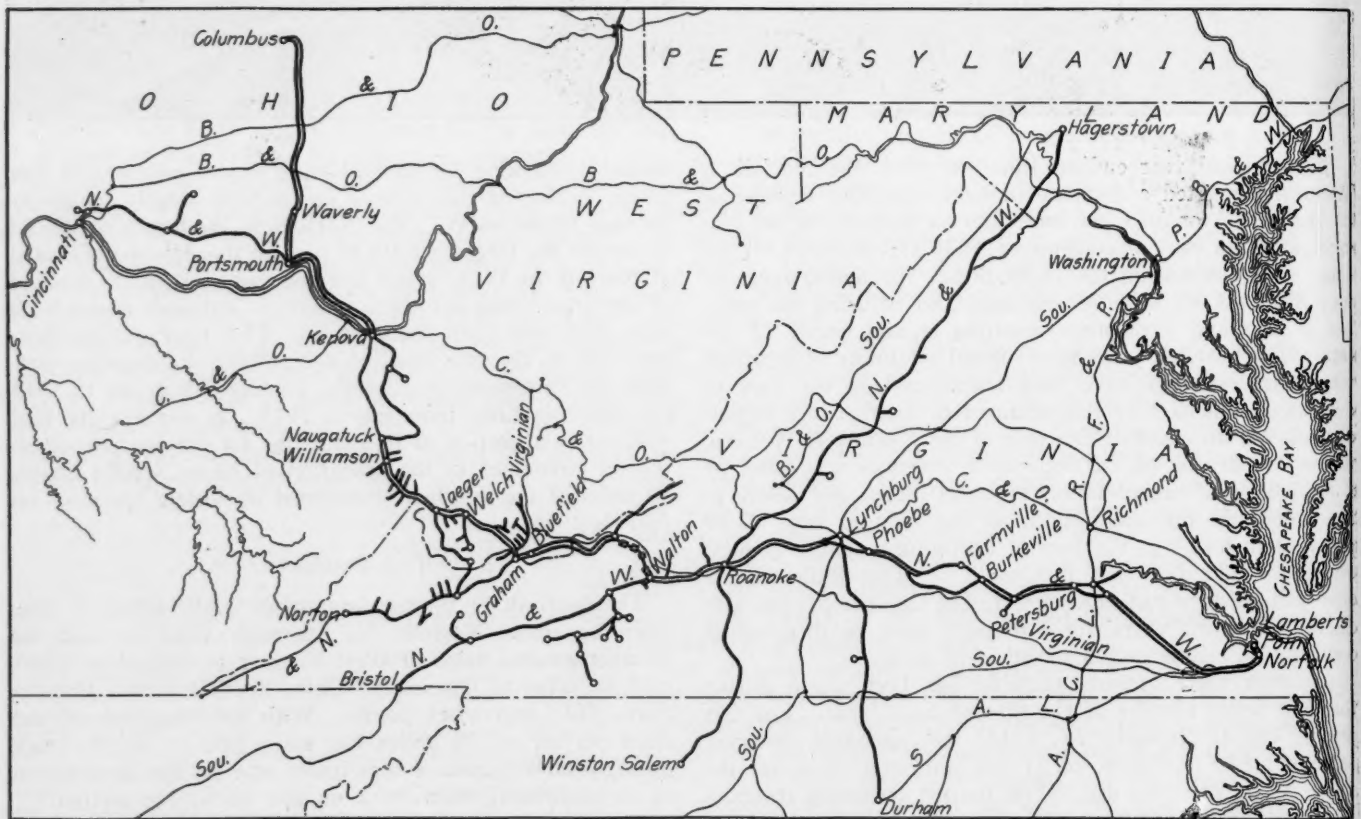
In point of traffic the increase has been even greater. In 1895, 6,509,935 tons of revenue freight were handled, as compared with 27,967,392 tons in 1915, an increase of 330 per cent. During this same period the freight ton miles increased 365 per cent. The number of passengers also increased from 841,986 to 6,352,783, or 655 per cent, and the passenger miles 467 per cent. The amount of business handled was therefore approximately five times as great in 1915 as 19 years previously. During this same time the ton miles of freight handled by all the railways of the United States increased slightly over 200 per cent., and the passenger miles somewhat less than this amount, indicating that the traffic of the Norfolk & Western has been developed over twice as rapidly as that of the average road in this country.

The Norfolk & Western is primarily a coal-carrying

Western each serve particular areas with little or no competition. The development of any particular field is, therefore, dependent very largely, if not entirely, on the service afforded by the road serving that area.

Under these conditions the growth of the tonnage of coal handled by a road is one measure of the character of the service afforded the coal operators along its line. In 1910 the coal tonnage of the Norfolk & Western amounted to 13,986,054 tons. In 1915 this had risen to 23,280,110 tons, an increase of 67 per cent in five years. This unusually rapid increase in output indicates that the development of the fields along this line had not been retarded by a lack of transportation facilities; in fact this development has resulted very largely from the amount, character and extent of the facilities so offered.

The coal traffic of the Norfolk & Western originates between Graham, Va., and Williamson, W. Va., a distance of 104 miles. This district produces normally about 2,000 cars of coal daily, in addition to about 100 cars of coke, a total of 214 mines and 2,034 coke ovens, owned by 146



The Norfolk & Western Lines

road. Over 85 per cent of its revenue is derived from freight, as compared with 11 per cent. from passenger traffic. Of this freight traffic approximately 71 per cent consists of bituminous coal. It must not be considered, however, that it does not handle a large traffic of other commodities, for if all bituminous coal traffic were excluded it would still handle more freight per mile of line than the average road of the United States. Over 90 per cent of its traffic originates on its own lines, although a large proportion goes to foreign roads, particularly north and west of Columbus.

Because of topographical and other conditions the relations existing between the operators in the coal fields of West Virginia and the railroads differ from those in most other fields. In nearly all cases in West Virginia only one road taps a particular field. Thus the Baltimore & Ohio, the Chesapeake & Ohio, the Virginian and the Norfolk &

companies, were in operation in this district on June 30 last. The largest individual area is the Pocahontas field, extending from Graham to Welch, 27 miles. This field includes 86 mines, the output of which is about 105,000 tons daily, or about 62 per cent of the total coal tonnage of the road. One short branch alone produces over 400 cars of coal each day. About 60 per cent of this coal goes west to Columbus for movement over the lakes via Toledo and for distribution through the Central West by rail. Of the 40 per cent of the total coal output which goes east about five-eighths goes to tidewater and the remainder to points along the line and to connecting lines. At the present rate of production it is estimated that there still remain in the fields immediately tributary to the lines of the Norfolk & Western over 5,000,000,000 tons of coal, or sufficient to continue operation at the present rate for 100 years.

As stated above, although the Norfolk & Western han-

dles a very heavy coal traffic, it also handles a heavy merchandise and time freight traffic over the main line, and also over the Shenandoah division from Hagerstown for points south of Bristol and Norton, in addition to a good local traffic over the main line and branches. About five time freight trains are loaded daily at Norfolk with merchandise coming by water from New York and New England points, billed to southern and western points. A considerable amount of freight moves via this route to Chicago, St. Louis and Kansas City.

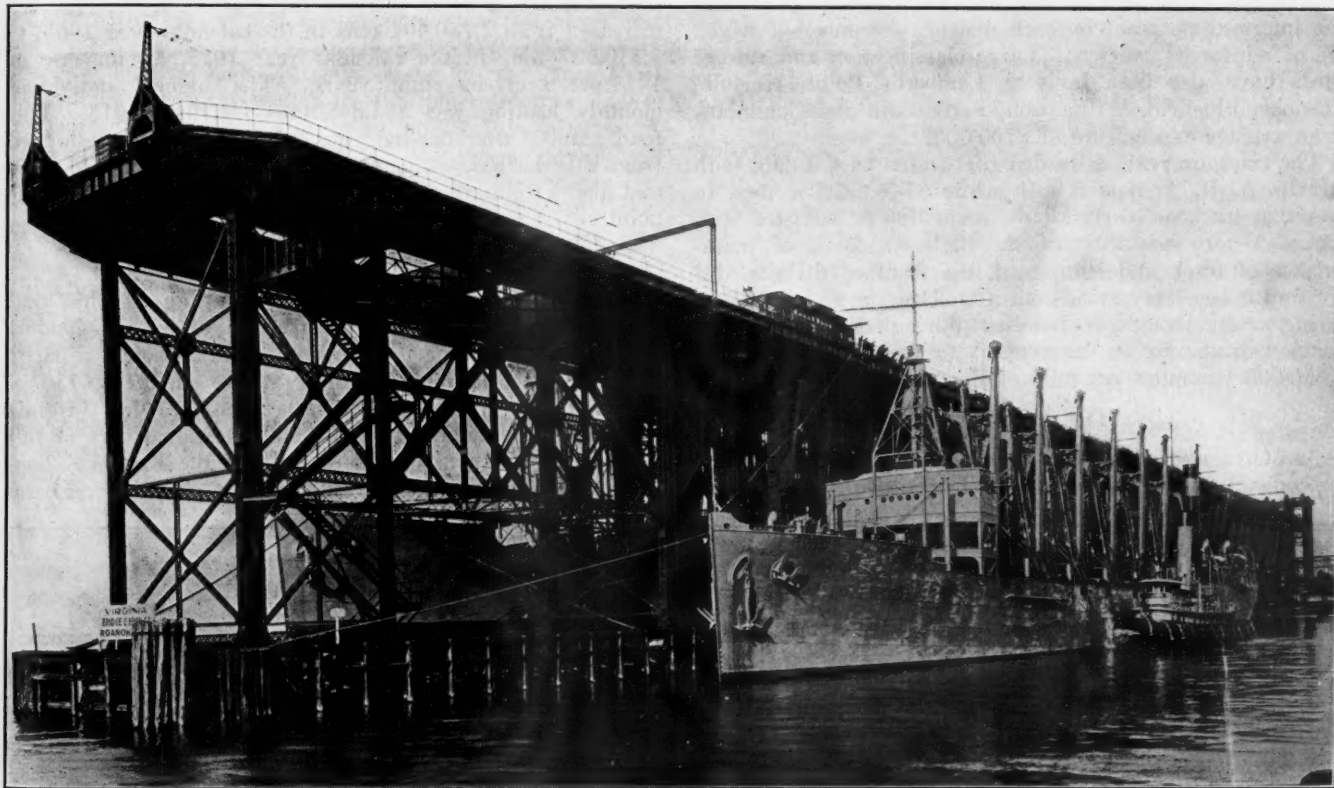
IMPROVED FACILITIES

The increase in traffic has made necessary continued expenditures for additional facilities. During the 19 years since the termination of the receivership practically the entire main line from Norfolk to Columbus has been rebuilt, not by making unusually heavy outlays in any one year, but by gradual, continued expenditures for second track, grade revision and curve reduction, from year to year, aggregating over \$36,000,000 in the last 14 years alone. Because of the character of country through which the road

of a single track low grade freight line on a new location at each of these points. That at Lynchburg is 22 miles long, eliminates 175 ft. of rise and fall, and was completed in 1907; that at Petersburg is 9 miles long, saves 131 ft. of rise and fall, and was built in 1909, while the Farmville line, which is 37 miles long, was placed in service early in 1916.

Similar improvements have been made on the other main line divisions. On the Pocahontas division, extending from Bluefield to Williamson, the line follows Elkhorn creek and Tug river through a very rough, mountainous country for a considerable portion of the distance. The curvature on the old line was heavy with many curves of 12 deg. Since 1903, 80 miles of this line has been rebuilt, reducing the maximum for all but 12 curves to 6 deg. or less. This work involved heavy and expensive construction requiring the building of 16 new tunnels and a total expenditure of nearly \$9,000,000.

Practically the entire Scioto division, extending from Williamson, W. Va., northwest 212 miles to Columbus, Ohio, has been rebuilt. This was originally a single track



Loading a United States Navy Collier at the Lambert's Point Coal Pier

passes and the high standards of grade and curvature adopted, this work has been expensive, some on the Pocahontas division costing \$250,000 per mile, while the average for 80 miles of the same division exceeded \$116,000 per mile.

The construction of second track on the Norfolk division extending from Norfolk west 257 miles to Roanoke was undertaken in 1901, and was completed early this year at a total expense of over \$16,000,000. At the same time the eastbound ruling grade east of Crewe, the intermediate terminal was reduced from 0.75 per cent to 0.25 per cent, and west of that point from 1.25 per cent to 0.5 per cent, except at the crossing of the Blue Ridge, where a 1.2 per cent grade still requires helper service. Originally helper service was also required for eastbound trains at Petersburg and Farmville, and for trains in both directions at Lynchburg, but all of this has been eliminated by the construction

line with an undulating maximum grade of 0.7 per cent and one westbound pusher grade of 1.2 per cent, a short distance south of the Ohio river. About 1903 the ruling grade was reduced to 0.5 per cent north of Kenova, and a new low grade line 60 miles long, with no adverse grade westbound, and with a maximum grade eastbound of 0.1 per cent, was built between Kenova and Naugatuck, to eliminate the pusher grade. North of Kenova the line was double tracked between 1909 and 1913, at which time the ruling grade was further reduced to 0.3 per cent westbound and from 1.0 per cent to 0.5 per cent eastbound.

Thus at the present time the Norfolk & Western has a double track line with a maximum grade of 0.3 per cent from the coal fields west to Columbus, Ohio, and of 0.5 per cent from the coal fields east to Crewe and 0.25 per cent from that point to tidewater, with the exception of helper grades at Elkhorn tunnel and at the summits of the

Allegheny mountains and the Blue Ridge, one of which has been electrified.

In connection with this reconstruction work it has been the policy to eliminate important grade crossings with highways as far as possible. To this end, about 70 such grade crossings have been replaced with overhead steel bridges or concrete undercrossings between Norfolk and Roanoke alone. Between Kenova and Columbus there are 46 such overhead and under-crossings, more than half of which were built at the time of the construction of second track on this division. The separation of grades at many of these points has been expensive, a considerable number of them costing between \$20,000 and \$30,000, and the average cost being in excess of \$7,000. Fifteen such crossings were eliminated last year.

Other important improvements to the physical property include the installation of automatic signals over the entire main line, the construction of double passing tracks of 80 to 100 cars capacity between the main tracks at intervals of 10 miles, the building of water stations with 200,000 gal. tanks and treating plants at passing sidings and the construction of modern coaling stations at the terminals and one intermediate point on each district, a number of which are of reinforced concrete. Large classification and storage yards have also been built at Lambert's Point, Norfolk, Roanoke, Bluefield, Williamson, Portsmouth and Columbus, at an average expenditure of \$700,000.

The track over which loaded coal trains pass is laid with 100 lb. A. R. A. type B rail, while 85-lb. rail is used in the other track. Nearly all the main line is ballasted with rock. As an indication of the high standards of maintenance of track and equipment, the Radford division did not find it necessary to call out a wrecker for six weeks last spring, even though it handled during that period the heaviest traffic in its history up to that time, exceeding 1,250,000 ton miles per mile of line monthly.

THE COAL PIER

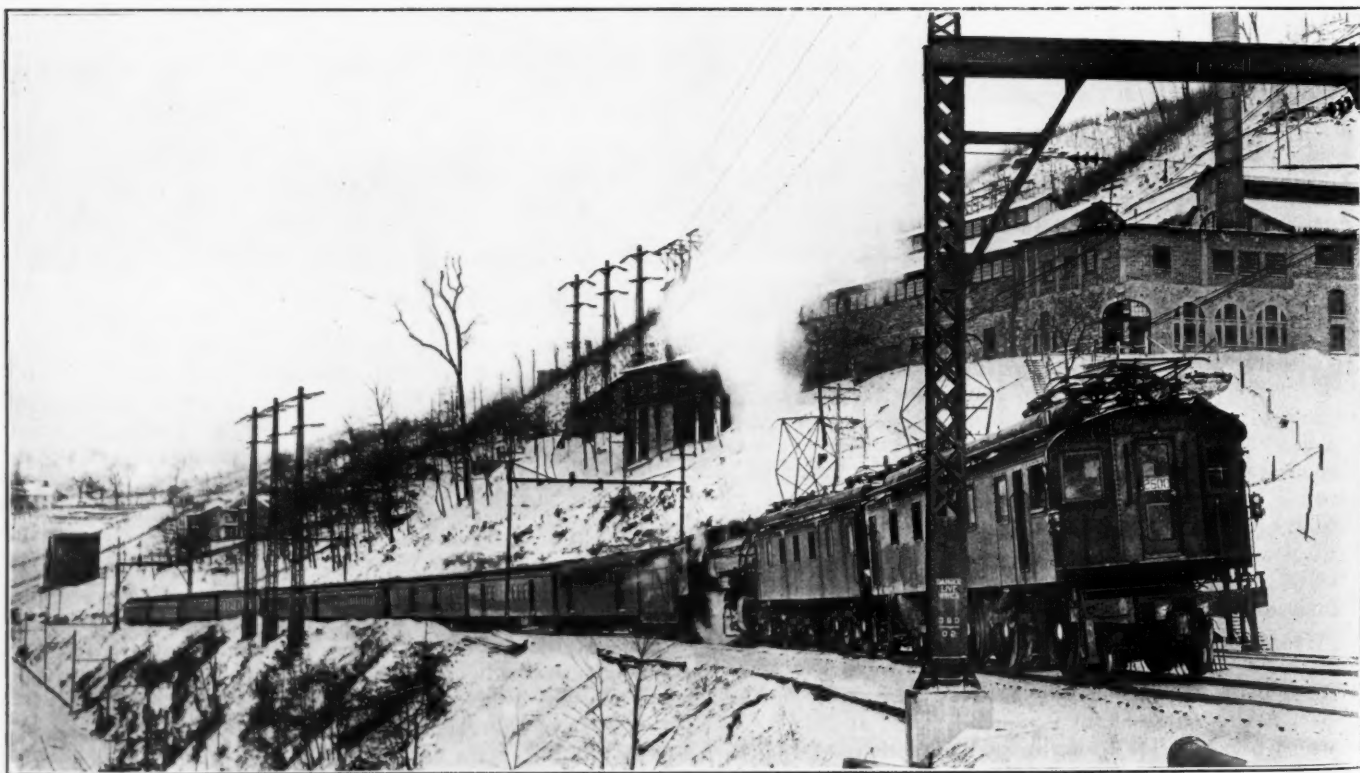
As stated above, the coal operators of West Virginia are dependent very largely upon the facilities afforded by the

particular railway serving their individual fields for transportation facilities which enable them to compete with other fields. This is especially true with reference to that coal which goes to tidewater for export or for bunker use, for, other things being equal, a boat will go to the dock that offers the best facilities and the least delay, and will take on coal coming from the mines shipping over that line. The coal operators therefore benefit equally with the road from the construction of modern terminal facilities. For this reason the completion of the new steel coal pier at Lambert's Point, Norfolk harbor, in 1913, supplementing two existing piers at the same point, formed a very important improvement from a traffic, as well as an operating standpoint.

This new pier is the largest on the Atlantic seaboard and has a capacity of 1,000,000 tons of coal per month. It is possible for it to load a boat with 5,000 tons of cargo in two hours, a task which formerly required 18 hours, and which is in itself an important consideration for beat operators. As much as 17,000 tons have been unloaded over one side of the pier in 10 hours. The total tonnage handled over the Norfolk piers of the Norfolk & Western has increased from 2,780,402 tons in the calendar year 1908, to 7,530,607 tons in the calendar year 1915, an increase of 171 per cent in eight years. The highest individual monthly loading was 853,845 tons in June, 1915. This road handles over one-half the entire coal tonnage shipped from this harbor, although both the Chesapeake & Ohio and the Virginian operate large coal docks at this same point.

THE 90-TON CAR

Another important step in the handling of this coal traffic was the design and construction of a steel gondola car, with a rated capacity of 90 tons, and an actual capacity with 10 per cent overload of 99 tons. In 1915, 750 of these cars were placed in service between the West Virginia coal fields and tidewater, and 1,000 additional cars of this same design have been ordered built at the Roanoke shops recently. This is the largest car ever built for general



Electric Locomotive Pulling a Passenger Train and Its Steam Engine up Elkhorn Grade, at a Speed of 28 Miles per Hour

service, the nearest approach to it being the 140,000-lb. capacity cars built three years ago by the Chesapeake & Ohio. Their special economy lies in the fact that, with overload, the percentage of revenue loading to total weight is 75 per cent, as compared with 60 per cent for the average 50-ton car. In operation, a few of these cars are commonly placed at the head end of each train to give shorter trains for all, rather than operating them in solid trains. While their limitation to tidewater service requires some additional switching at the mines, this is more than offset by the economies effected in transportation.

MALLET LOCOMOTIVES

One of the most important operating economies has been secured through the general use of Mallet locomotives for road service. In May, 1910, 10 locomotives of this type were purchased. Based on their successful performance, 40 more were secured in 1912, and others have been bought at intervals since that time, until 128 are now in use. The latest Mallet locomotive used on the Norfolk & Western have a weight of 337,300 lb. on drivers, and a tractive power of 73,000 lb. All but the first 10 Mallets were equipped with stokers and superheaters when purchased and stokers have since been added to these 10. Both stokers and superheaters have also been added to the large Consolidation locomotives with a tractive power of over 40,000 lb. and they are now also being added to one class of Consolidation locomotives of 40,000 lb. tractive power.

These Mallet locomotives are used on the Pocahontas and Scioto divisions for all tonnage trains, with Consolidation locomotives on time freight trains. The Mallets are also used largely, but not exclusively, east of Bluefield. Consolidation engines are employed exclusively on the mine spurs and in the yards, no special switching power being built. One of these Mallet locomotives will haul 5,000 tons from the coal fields to Columbus without assistance, while east from Bluefield it will haul 4,300 tons to Roanoke, with a helper for seven miles at Christiansburg. East of Roanoke, with a Consolidation helper from Roanoke to Phoebe, and a Mallet pusher from Bonsack to the summit of the Blue Ridge, a Mallet engine will haul 5,000 tons to Crewe, and, when trains are composed of 90-ton cars, 5,250 tons. East of Crewe Consolidation locomotives are largely employed because of the low grades. On the district a saturated Consolidation locomotive hauls 4,100 tons, while a superheated Consolidation locomotive hauls 4,400 tons.

In connection with the development of its motive power, an interesting detail of the Norfolk & Western operation is the large amount of mechanical construction work done at the system shops at Roanoke. Not only is the usual heavy repair work carried on at this point, but all passenger locomotives and all steel cars are built at these shops, including the 90-ton cars. An average of 12 to 13 new cars were turned out here daily last year, while the output was increased to 20 cars per day for a month at a time at certain seasons. About 5,000 men are normally employed at these shops.

THE ELECTRIFICATION

The most recent important improvement is the electrification of that portion of the main line of the Pocahontas division extending from Bluefield west 28 miles to Vivian. This section of the line traverses most, although not all, of the coal producing area, and is the source of the greatest amount of traffic. The line is double track, except for a distance of 3,000 ft. through Elkhorn tunnel at the summit. The grade eastbound ranges from one per cent east of Vivian, up to two per cent for the last four miles leading to the tunnel. The curative is equally heavy, 60 per cent of the line being curved. All of the coal originates west of a point six miles east of the tunnel, and 80 per cent of it

west of the tunnel itself. Some of that originating east goes west, and 40 per cent of that originating west goes east, all of which has to pass through this single track tunnel with the through freight and passenger trains.

The traffic had increased to a point where it was necessary to adopt some means to increase the capacity of the line at this point. The construction of additional tracks, particularly through the tunnel, would involve a very heavy expenditure. It was therefore decided to secure the desired relief through the electrification of this section of the line which for operating purposes practically comprises of one large terminal district independent within itself. Electrification was decided on solely to effect operating economies by relieving congestion and increasing the capacity of the line through the hauling of heavier trains at higher speeds. Eight electric locomotives were placed in service on July 1, two of which haul 3,250 tons up the two per cent grade to the tunnel, a task formerly requiring three Mallet locomotives. While no records of comparative operations have been made up to this time purposely, the results so far lead to the belief that the full expectations are being realized both in decreased helper mileage and in faster movements, thereby relieving the congestion, which otherwise would have forced the construction of additional facilities at heavy expense.

MOVING THE COAL

As stated above, about 2,000 cars of coal originate in the territory between Bluefield and Williamson daily, and most of this between Graham and Welch. To keep the mines in this vicinity supplied with empty cars and to remove the loads without delay and congestion requires a careful organization. Consolidation locomotives and crews are employed continuously on these mine spurs to do the switching and to bring the loads out to small storage yards located between the main tracks at the junctions with the mine spurs.

For operating purposes the main line is divided into two sections by Elkhorn tunnel. The mines east of the tunnel are served by trains which bring empties out of Bluefield to these mine spurs and return with the loads, setting out westbound loads at Flat Top yard, eight miles west of Bluefield. The line west of the tunnel is served in the same manner by crews working out of an intermediate terminal at Eckman, three miles east of Vivian. Crews also run from Eckman direct to Wilcoe on the Tug Fork branch, where they secure solid train loads of coal for westbound movement. Other crews also operate turn-around runs between Williamson and Eckman, and between Williamson and Bluefield, the latter crews hauling the eastbound coal from these various storage yards to Bluefield and the westbound coal from Flat Top yard and intermediate sidings to Williamson.

As the coal comes from the mines, that billed east moves under a white tag, and that west under a green tag, which tags show full billing information. At the classification yards at Bluefield and Portsmouth the cars are weighed and waybills made out. The classification at these yards is heavy, because of the large number of coal operators and grades of coal. There are 65 different classifications for the coal moving over the Great Lakes alone. Coal for tidewater is billed to consignee by grades and about 2,500 cars are usually held in the storage yard at Lambert's Point. As far as possible, trains are made up at Bluefield for movement direct to the coal pier, without the necessity of doing any switching at intermediate terminals.

OPERATING MEASURES

It would naturally be expected that the expenditures for the construction of additional track facilities, for the reduction of grades and for the installation of heavy motive

power would be reflected in increased train loading, and this is the case, especially in recent years. In 1910, 6,722,495,887 ton miles of freight were hauled with 10,578,541 revenue freight train miles. In 1915, 8,918,549,288 ton miles of freight were handled with 10,396,799 revenue freight train miles. In other words, an increase of 33 per cent in freight traffic was handled with a decrease of 2 per cent in train miles. This was accomplished by increasing the revenue train load from 635 tons to 841 tons, or 32 per cent. This in itself is an unusual record, which is again being broken this year, and accounts in large measure for the unusual success attending the operation of the property. This train load has been secured in spite of the large proportion of empty car mileage. It is not only necessary to return coal cars empty to the mines, but box cars are moved east to Norfolk empty at times to protect the merchandise loading, resulting in a heavy empty car movement in both directions east of Bluefield.

Special attention has been given to the use of equipment, both with respect to increasing the car load and to keeping the cars moving. As a result the average car loading had increased from 29.32 tons in 1910, to 32.56 tons in 1915. This has been accomplished primarily by checking carefully the loading of cars at the mines. The weighmasters at Portsmouth and Bluefield yards watch the loading carefully and report all cases of light loading to the proper officers for investigation. As a result of such measures the average loading of coal cars was 47 tons previous to the receipt of the 90-ton cars. Close attention to the continued regular movement of traffic has resulted in the average miles per car per day ranging from a minimum of 30 in times of slack business to a maximum of 51.4 miles for one month late in 1913.

Telephone train despatching is employed over the system, running orders being issued only on single track. On the 20 miles of single track west of Walton, on the Radford division, where the traffic is particularly heavy, a special arrangement has been worked out whereby trains move eastbound on signal indications along with No. 19 orders on superior trains only. Westbound trains are governed by the operators at the block stations, who forward trains under the direction of No. 31 orders.

As an illustration of the methods which are being perfected from time to time to decrease the cost of operation, the hump yard at Portsmouth has been operated only during the day time for several months with excellent results. Each evening the receiving yards are entirely cleared of cars before work is stopped, while the departure yards are cleared during the night. In the morning the first trains classified are those requiring the least breaking up in order to get them started on the road as promptly as possible, while those requiring more thorough classification are handled later in the day. While it was at first thought that this could not be done, the abandonment of night work has eliminated two switch engines and 14 riders, at a saving of over \$5,000 monthly, aside from the materially decreased damage to equipment.

The measures described above are those which have enabled the unusual financial results to be secured, which were outlined at the beginning of this article. In spite of the fact that the traffic has increased five-fold in the last 19 years, the facilities have kept pace with this remarkable growth, so that the property has not suffered from serious congestion. The fact that an increase of 61 per cent in the amount of freight handled in December, 1915, as compared with the same month of the previous year, with an increase of only 17 per cent in transportation expenses, shows the capacity of the road is well in advance of its requirements. With the unusual showing during the fiscal year ending June 30, 1915, a period of decreasing revenues,

and with an even more unusual showing being made since that date, during a time of business revival, a still more favorable showing may be expected in the future.

THE BROTHERHOODS AND THE POLITICIANS

By W. L. Stoddard

WASHINGTON, MARCH 30.

Paramount interest centers here this week, so far as railroad matters are concerned, in the formal presentation to the railroads by the brotherhoods of their so-called "eight-hour-day" demands. Washington is, as a rule, slow to react to outside stimuli, and in all likelihood the majority of Congress, to say nothing of the cabinet, are quite ignorant of the latent and dangerous possibilities in the situation.

The announcement this week by the Chamber of Commerce of the United States of its special committee to investigate such phases of this critical situation as relate to the interests of the public has considerable importance. The Chamber of Commerce has strong and intimate connections with officers of the government and its investigations possess an influence commensurate with that of a publicly maintained institution.

The rumor is gaining currency here that the brotherhoods will go before the resolutions committees of the Republican and Democratic national conventions in June with the demand that the conventions endorse, in terms, the eight-hour day. Put boldly in this way, with no chance of going into the technical details, an issue will be presented to the statesmen of the two or more political parties which will be hard for them to avoid. When the conventions meet in June, the railroad situation will probably be acute, and the presentation of a cleverly worded plank will force the hands of the party leaders. If they refuse the request of the men they will run a grave risk of being attacked as "enemies of labor." If they accede to the request, they will run an equally grave risk of the righteous wrath of the railroads for making a political issue out of a matter properly belonging to the sphere of arbitration and economics. It will be, in short, the usual case of being between the devil and the deep, blue sea.

It is yet too early to forecast what the solution may be, but forewarned is forearmed, and there is hope that such a complication as that suggested can be avoided by intelligent and enlightened action. At the present time with the air full of war and rumors of war, those who will be asked to endorse the eight-hour day at Chicago and St. Louis have scarcely begun to think about their responsibilities.

Meanwhile there are various suggestions looking toward a peaceable settlement. Charles L. Bernheimer, chairman of the Standing Committee on Arbitration of the Chamber of Commerce of New York State, proposes that the National Civic Federation or the organization which Mr. Bernheimer represents, might offer, "in a spirit of friendliness and good will, plans looking toward mediation or arbitration." He goes on to recommend inviting delegates from the operators and from the workers to meet in conference under the auspices of one of these organizations in an attempt to get together. He seems to forget, however, that if mediation is to be employed, the United States Board of Mediation and Conciliation is already in existence.

NEW RAILWAY SHOPS IN CHILE.—A recent consular report says that the National Railways of Chile will open bids on May 4 for the construction of central workshops at San Bernardo. The report says that plans and specifications for the work may be obtained on application at the offices of the railways in Santiago.

The Lately Revised A. R. A. Standard Code

A Critical Study of Train Rules 82, 85, 87, 88, 90,
92, 94, 103 and of Numerous Forms of Train Orders

By Harry W. Forman

THIRD ARTICLE.*

The second paragraph of rule 82 had to be officially interpreted before it was understood alike by all. The explanation is simple enough but examiners should take care to clarify it as follows: Should a train have an arriving and leaving time at an intermediate station, it does not lose its schedule unless it becomes twelve hours later than its arriving time before reaching such station. Having arrived less than twelve hours late, it has fulfilled that part of its schedule and need not give it further consideration. It is then only necessary for the train to get away from such station less than twelve hours late on its leaving time. Should a train flag in because more than twelve hours late on its arriving time, the conductor must then obtain a train order to again assume the schedule; for the despatcher may, if he chooses, annul that schedule, or order some other crew to assume it, without advising the crew who had the schedule, but lost it by reason of their having failed to arrive less than twelve hours late.

Rule 85. Fifteen years ago, I was informed by a member of the train rule committee of the A. R. A. that when a train was scheduled to be passed by another of the same class, the train to be passed must wait indefinitely at such station to let the train which was scheduled to pass it get by, unless advanced by train order; that in this particular this time-table provision dominated rule 85, being in the nature of special instructions. On October 18, 1915, the full committee rendered a decision to the effect that in such cases passing points are not positive; that the train scheduled to be passed may proceed on its own schedule. The effect of this decision would seem to reduce passing figures, as between trains of the same class, to a mere matter of information. Should the train which is to be passed be late, and the train which is to pass it not be in sight, it need not even stop at the schedule passing point. Should it arrive ahead of time, it must be prepared to let the following train by without delay. If, when due to leave, the train which should pass it is not in sight, it may proceed on its schedule. When overtaken, the following train should be allowed to pass with the least possible delay.

In rules 86 and 87 the words, "not less than five minutes" are used, while rules 89 and 91 read, "at least five minutes." The latter form of expression would answer very well for all rules.

Rule 87 (second paragraph):—Extra trains must clear the time of opposing regular trains not less than five minutes unless otherwise provided, and will be governed by train orders with respect to opposing extra trains.

Southern and western roads handle thousands of cars of fruit, vegetables and live stock. These trains are quite often run extra on a schedule with right over all except first class trains. This means trains moving in the same direction, as well as opposing trains. Nowhere in these rules have I been able to find definite instructions directing extra trains to be governed by train orders with respect to other extras moving in the same direction. By changing the last three words of the above paragraph to read, "other extra trains," or, "opposing extra trains and those moving in the same direction," instead of "opposing extra trains," scheduled extras will be provided for. This slight change would seem to be essential to completeness. No misunderstandings are likely to result should the last thirteen words of this paragraph be omitted,

as the entire proposition is cared for, constructively, by other code rules and train order forms.

88.—At meeting points between trains of the same class, the inferior train must clear the main track before the leaving time of the superior train.

At meeting points between extra trains, the train in the inferior time-table direction must take the siding unless otherwise provided.

Trains must pull into the siding when practicable; if necessary to back in, the train must first be protected as prescribed by rule 99, unless otherwise provided.

In discussing clearance the subject is much simplified by discouraging all reference to anything less than one minute.

Roads having all double track must show on time-tables the direction in which trains are superior, the same as is done on single track, so that Form D-S can be used.

Should a train be directed by train order to back into a siding, it does not then seem to be necessary to first protect the movement as prescribed by Rule 99, although some roads require it; but (assuming an eastbound train) a flagman should be dropped off to inform the westbound train that the eastbound has arrived. Seeing a train on the siding is not authority for the westbound train (which is to hold the main track) to occupy any part of the track which must be used by the eastbound train in pulling forward to back in, as the eastbound may not yet have arrived at the station.

Rule 90 (third paragraph):—Trains must stop clear of the switch used by the train to be met in going on the siding.

Some stations have two or more sidings for westward trains, and as many for those moving in the opposite direction. In cases of this kind it is necessary to fully instruct as to how the above paragraph shall apply. Often on, say westward sidings, one switch is some distance beyond the other entrance switch.

92.—A train must not arrive at a station in advance of its schedule arriving time.

A train must not leave a station in advance of its schedule leaving time.

Trains are arriving at stations in advance of their schedule arriving time almost daily, on practically every road in the United States. The only way to prevent it would be to make their time so fast that they could not do so. It is necessary that a train should arrive a few minutes ahead of time if a superior class train is scheduled to meet or pass it on the arriving time.

There is nothing so very wrong in giving a train an order to leave one station ahead of time, if the despatchers could be depended upon not to make too common a practice of it. It sometimes saves the day for the train. In order to avoid giving such an order, the train must be annulled at D and run extra D to E, where it may again assume its schedule; or it may be detoured from D to Q and again pick up its schedule at Q. So, after all, there would seem to be an authorized train, running in advance of its schedule, with authority to again take up its schedule when it becomes due. The same conditions sometimes are present when a new time-table takes effect.

Rule 94. The third paragraph of Rule 85 provides that when sections exchange train orders, signals and numbers they must report the fact at the next available point of communication. Provision for reporting under rule 94 is not expressed in the same language. There is very little difference in the two situations, however. If the engines on extra

*Previous articles appeared January 14, page 65, and February 18, page 291.

trains, or sections of trains, do not agree with the previous orders, or instructions creating such trains, it may be understood that when such trains report to the despatcher later on he will issue new running orders. If there has been no change in identity, all that appears to be necessary is to advise the despatcher of the change in the relative position of the trains.

Rule 99. It is to be sincerely hoped that in all future books of rules this rule will be adopted without any change or additions whatever. All of us have seen the folly of prescribing flagging rules which differ from those prescribed by the standard code. If trainmasters and examiners will fully instruct and drill flagmen, and if conductors will make them attend to business, new code rule 99 will prove as satisfactory as any that has ever been written. After the collision at Montz, Louisiana, in November, 1912, an investigation instituted by the State railroad commissioners developed the fact that there were in that State about as many different flagging rules as there were roads. Finding so many apparently capricious opinions as to how a train should be protected, these commissioners decided to put into effect a flagging rule of their own invention. It was not so good a rule as that used by some other roads in that State, particularly the Illinois Central, though it may be presumed that these roads had to respect it, thus making it necessary for flagmen to keep two such rules in mind on the same division.

Had all roads been able to show that there was one common rule on all roads, and that it harmonized with that which was recommended by the greatest railway association on earth, it is likely that these commissioners would have hesitated long before undertaking to disregard the judgment of these experienced railroad officers.

The clause which prescribes that when recalled, if a passenger train be due within ten minutes, the flagman must not return until it arrives; and the one stating that the time of greatest risk is when a flagman is returning to his train, cannot be very strongly praised. Nor is it probable that many railroad men who have given the matter careful consideration would be willing to endorse such a statement, or claim that it was useful.

It is true that there is risk while a flagman is returning to his train, but the time of greatest risk is from the moment his train stops until he has had time to get back far enough to fully protect it. This risk will be still greater should he be deprived of audible stop signals. Many flagmen have been passed because not seen; but their stop-torpedo averted a collision. Sometimes the sun, or an electric headlight, will make it very difficult for an engineman to see anything in front of his engine. Should your rule 15 prescribe the use of one torpedo to indicate stop, of course new rule 99 must be made to harmonize therewith.

Rule 103. For legal reasons, it would be best to omit from this rule the words, "the front of." Should a trainman comply with this provision, that is, take his stand on the front end of the leading car, very likely he would be thrown off his feet, and perhaps killed, the first time the slack ran out, or a sudden stop was made. The rule should be made fool proof.

It will be noticed that the code does not refer to bulletins, though they are used on all roads to give notice of new timetables, new sidings, and many other matters intimately affecting the movement of trains. Rule 108 might well be devoted to this subject. Certain kinds of bulletins should be printed (not mimeographed) and a copy delivered to each conductor, so he can keep them at hand in a book, for ready reference.

TRAIN ORDERS

Rule 201. Better results would no doubt obtain were despatchers to sign train orders.

Rule 206. When a conductor makes use of the telephone to secure orders for his train, he should be governed by rule

219; that is, require his engineman to sign orders before repeating them to the despatcher. Otherwise there is too much chance for the engineman to leave the station on an unauthorized start signal, without his conductor. This requirement should be written into all books.

Rule 208. In case of doubleheaders, only the leading engine need be referred to in train orders, but all orders for the train must be delivered to each engineman. The third paragraph of this rule reads, "Copies of the order addressed to the operator at the meeting or waiting point must be delivered to the trains affected until all have arrived from one direction." The rule would have been plainer had it stated that the order must be delivered to trains affected until all moving in one direction have had copies placed in their hands. Operators should be instructed to do this, (except possibly where the block system is used) for the following reason: The order addressed to the operator, commonly spoken of as the "middle order," may not have been delivered to all trains concerned before their arrival at the meeting point. In a meeting of two extras; or when a work extra is held for some other extra; or even where a superior train meets one inferior to it, it will be seen that it would not be safe to permit an operator to restore his order-signal to proceed merely because trains from one direction had arrived. Not only must all from one direction have arrived; they must be known to have seen the order.

Rule 210. The provision, reading, "Each operator receiving the order should observe whether the others repeat correctly," is not positive and therefore not as desirable as a rule reading, "Each operator receiving the order must observe how it is repeated by the operator who first repeats it, and must at once call attention to any discrepancy." The latter provision can and should be enforced. If the matter is handled in any other way, very little attention will be paid to the rule by operators because, as soon as they repeat an order and get "complete," they ordinarily must give attention to delivering it to waiting trains; or quite often must turn to some other wire to take a message; or go to the ticket window to attend to the wants of passengers.

Despatchers should be held personally responsible for knowing that all orders are repeated correctly by each operator. There is only one way for them to know that this has been done and that is by carefully underscoring each word or figure at the instant it is repeated. There has been a great deal of carelessness on the part of despatchers in performing this highly important duty. I have known more errors to escape detection in the despatcher's office where copy operators were employed than where despatchers were required to give this detail their personal and undivided attention.

It is important to note that the rule directs that conductors and enginemen must, when practicable, show train orders to other members of the crew; not inform them of their contents, or read orders aloud to those men. The orders are to be shown, so that each employee can discover for himself the contents. This is as it should be.

Rule 211. It will be noticed that no restriction is placed upon the use of Form 19; that it is not a violation of code principles to use it to restrict a train. However, nearly all companies will desire to add Rule 211a to provide that this form shall not be used to restrict a train for one moving in the opposite direction, unless a copy be also sent to the operator at the meeting or waiting point, and not then if the train order signal be located beyond the switch where the superior train must wait for the opposing inferior train. Of course the order should be sent to all of the trains before they reach the place of meeting. I do not contend that Form 19 should not be used for all movements where trains are running in the same direction, as, for example, authorizing an inferior freight to run ahead of one which is superior to it.

Roads that have adopted the plan of requiring station operators to deliver clearance cards with all orders, will hardly care to abandon this most desirable and satisfactory safeguard. Those who have not given it a trial probably do not realize the marked advantages of such a system. Rule 211b can be used to provide for this. It is not always practicable nor absolutely necessary to deliver clearance cards with train orders, except at offices which are in charge of an operator.

Rule 214. I have been informed by some operators that when they were examined on this rule they were told that if in their judgment they felt that it was safe to do so, they might, after having obtained signatures, write "complete" on such 31 orders as they had repeated, in case of wire failure, when a train would be delayed if not done. This is straining the word "safety" almost, if not quite to the breaking point. Authority to do otherwise than hold the train cannot be found in the wording of the rule. Rather than run a risk of this kind it would be better to permit the despatcher to complete the order before receiving the conductor's signature, when he knows it is safe to do so; as, for instance, when the order-signal is known to be at stop and there is only one order awaiting trains at that station. An order containing both restrictive and helping instructions might be issued on Form 31 for trains at different stations and, at the time of failure of wires, it may not yet have been repeated, or the X response given, by all operators. This is one reason why I think Form 19 should be used more freely.

If an operator holds a 31 order calling attention to a new time-table; or one containing instructions only for the train to run late; or only to meet or wait for a train at his station, it is not probable that a collision would result were he, in case of wire failure, to complete such order; provided he waits to do so until after the run-late time, or until the train to be met has arrived. But even then, in the last two cases, it will be seen that there is risk, since he may not be sure that the despatcher had heard him repeat the order, and he may not have copied it correctly. Of course, the risk is greater in case operator has only sent the X response.

Rule 220. How to annul a part of an order and always leave enough of the remainder in shape to be used without possibility of misunderstanding, is a problem that has long puzzled me. Should No. 1 be directed to meet No. 2 at B and run 20 minutes late B to E, it would be an easy matter to annul the run-late part of the order without causing confusion. But should Order No. 10 direct No. 1 to meet No. 2 at S and No. 4 at T, and then another order be issued, reading, "That part of Order No. 10 reading No. 1 meet No. 2 at S is annulled," one gets the impression that all that is left of Order No. 10 is "and No. 4 at T." I am aware that it is generally inferred that "No. 1 meet" shall be read into the modified order, but is it strictly proper to do so?

The fact that when a schedule, or a section of a train, is annulled, it becomes void between the points and on the date named, and cannot be restored, would seem to make it unnecessary for a crew to have copies of such orders oftener than once, although they may make several trips within that territory during the life of such schedule. Despatchers and operators should be relieved of having to furnish copies oftener than once. Instructions to this effect could be printed under Form K.

When, about fifteen years ago, I contended that all orders held by an extra were fulfilled when it reached the last-named station in its running orders, or when the time-limit of a work extra expired, very few agreed with me; others said that while this was technically true it would be best to keep it dark. Today this principle is generally understood and agreed to. It seems to me that this well-known fact should be recognized and the clause printed in all books of rules, giving it the same prominence that Rule 220 gives to the principle as it relates to regular trains.

Despatchers must not depend wholly upon the provisions to be found in the new third paragraph of this rule. Should there be any doubt about conductors and enginemen who relieve others on the road having an opportunity to obtain the orders from the men relieved, it is the duty of the despatcher to reissue such orders. Examiners should be particular to call the attention of train and enginemen to this new provision, as many, no doubt, have grown up under a system of railroading which made it obligatory for the despatcher to attend to all such details. Despatchers will agree with me that, rather than be haunted by the fear that a crew may not have all the orders it needs, they would prefer to go to a little extra trouble to make sure.

Rule 221 (A).—" . . . A train must not pass the signal while 'stop' is indicated."

This rule may of course be modified so as to permit a train to pass the signal while at "stop", when necessary to do so in order that it may go to a siding beyond the signal to get out of the way of another train, and when the signal cannot be restored to "proceed" long enough to permit this movement to be made.

Rule 222 should provide that, at stations where train registers are kept, and where it is the duty of operators to register certain trains, such trains must be registered by the operator before he reports them to the despatcher; this to prevent error in registering. The "O S" report must always say whether or not green signals are registered.

FRANK TRUMBULL ON FEDERAL REGULATION

Frank Trumbull, chairman of the board of directors of the Chesapeake & Ohio and chairman of the Railway Executives' Advisory Committee, recently appeared at a hearing before the interstate and foreign commerce committee on the proposed investigation of the subject of railroad regulation. An abstract of his statement is as follows:

Of all our domestic problems, the matter of efficient regulation of the railroads is the most important. I have read most of the testimony given to you last week by members of the Interstate Commerce Commission and while we might differ about some details, I want to say to you that I think they were altogether too modest in what they asked. While we are sitting here, the individual states are regulating interstate commerce. The Interstate Commerce Commission is also trying to regulate it. I think they should control it. I cannot go into the legal phases of the argument because I am not a lawyer but perhaps I can give you one or two concrete illustrations of what I mean.

In the Eastern Rate Case, the Interstate Commerce Commission found decisively that the revenues of the carriers were inadequate and they finally granted an increase, but within three or four days of their final decision, the state of Pennsylvania handed down an order reducing rates on anthracite coal to Philadelphia which, if carried out, would take away several million dollars in the aggregate from some of the roads which had just been granted an increase. It is in the courts now. What the outcome will be, I do not know but I do know that litigation keeps everybody in bad humor. The railroads in Virginia charge 2½ cents a mile for carrying passengers. The state of Kentucky reduced its rates from 3 cents to 2½ cents a mile. The state of West Virginia reduced its rates to 2 cents a mile. Now if the railroads themselves were to make a discrimination like that there would be no end of condemnation, for surely it is worth as much to ride on a passenger train in West Virginia as in Virginia or Kentucky. It is a fact which I state without fear of contradiction, that the states are regulating interstate commerce, although it was never contemplated that they should do so—so on every account I hope that this committee will make a favorable report on the resolu-

tion which is now before you, Senate Joint Resolution 60, and let everybody have a chance to be heard—shippers, railroad men, bankers, investors and everybody who has an interest in this matter and let them tell you what they think about it.

So far as the regulation of securities is concerned, I know there has been a feeling that Congress ought to tackle it and the railroads are perfectly willing that Congress should do so if Congress will do it in an efficient way and will emancipate the railroads from attempts by the states to do the same thing. I may say to you, however, in this connection that within the last two years several things happened. For example, here is Section 9 of the Clayton bill:

Every president, director, officer or manager of any firm, association or corporation engaged in commerce as a common carrier, who embezzles, steals, abstracts or willfully misapplies, or willfully permits to be misapplied, any of the moneys, funds, credits, securities, property or assets of such firm, association or corporation, arising or accruing from, or used in, such commerce, in whole or in part, or willfully or knowingly converts the same to his own use or to the use of another, shall be deemed guilty of a felony and upon conviction shall be fined not less than \$500 or confined in the penitentiary not less than one year nor more than ten years, or both, in the discretion of the court.

Now this is a new law, passed only 14 months ago. I do not know the genesis of it, but I have heard that it was passed because of criticisms directed against the attorney-general for not bringing prosecutions against officers and directors of certain railroads. This provision now enacted in a statute will undoubtedly go further toward curing any evil you may apprehend than any other one thing. You will also find in the Clayton bill an attempt to deal with the question of interlocking directorates.

One of the charges that have been made is that railroad directors have been dealing with themselves, and here is an attempt to cure it by legislation. I am sorry to say that it was not efficiently done, and this is another illustration of how important it is to have questions of this kind thoroughly considered before any action is taken upon them.

The difficulty with Section 10, to which I refer, is that a company cannot have certain transactions with another company even if the first owns all of the stock of the second and at the same time have common directors. Right in the face of this, however, is another provision in the Clayton bill legalizing holding companies and specifically providing that railroads can acquire the stock of other railroads. There is, very properly, a provision for railroad extension through ownership of stocks and the ownership of end to end lines is legalized. Now, necessarily, such lines as that will have financial and other transactions with each other. They will be selling coal, ties, lumber and other material to each other. They will be loaning money to each other and guaranteeing securities, and yet this provision is so loosely drawn that questions have been raised about the continuity of direction which the Clayton law itself evidently contemplates.

So, we think, Mr. Chairman, first; that Congress has a perfect right to take jurisdiction of the supervision of securities, but it ought not to confuse investors in doing it. Nineteen states are already attempting to deal with this question of regulation of securities and unless you emancipate the investor—and, after all, you are dependent on him for development of transportation—from the interruptions and intrusions of state authorities upon the instrumentalities of interstate commerce, you will not have a satisfactory amount of capital flowing into these roads.

Another thing has happened to which I call your attention, and that is the decision of the Interstate Commerce Commission in the Eastern Rate Case. Here is an important part of it in which they say:

"Net corporate income is the amount remaining for dividends and surplus after interest, leased line rental and other charges have been paid." They go on with further explanation and then say: "It is unnecessary to illustrate further the impropriety of accepting net corporate income as a measure of the adequacy of rates. The carriers, however, while exhibiting their returns in net corporate income have very properly placed greater dependence upon

the net operating income as the measure of the sufficiency of their returns; and we shall use the net operating income of these carriers as the product of transportation rates that should be examined in order to determine so far as we may the adequacy and tendency of their revenues."

Now that sets at rest the charge that the railroads may demand rates based upon the interest on their bonds. No court has determined that any railroad is entitled to interest on its bonds or dividends on its stock, but courts have said that railroads are entitled to a reasonable return on a fair value of their property, and this decision of the Interstate Commerce Commission is in line with that position. The fact is that the railroads put their *property*, not their stocks and bonds, at the service of the public. So we feel there is no particular urgency about this thing because of the provisions of the Clayton law and the decision of the Interstate Commerce Commission from which I have quoted. If you think that there is urgency about it, we are quite willing to sit down and help draft a law that is suitable, provided that in doing so you will emancipate us from the conflicting regulation of the states. This and many other questions could be investigated by a joint committee of Congress such as is proposed in Senate Joint Resolution 60. When the Interstate Commerce Commissioners say to you, as they did within a week, that they want to do what is fair by the railroads, you ought to put them in a position to do it and not let any of the states tear it down.

The gentleman on my left here asked about West Virginia differential coal rates. I am very glad he asked that question because I happen to know something about it. There is as much feeling in Ohio in that matter as in West Virginia. It started with a local reduction of rates by the state of Ohio, and has become very complicated and one of the most confusing things I have ever come in contact with. It is that sort of thing that impelled me to say that the Interstate Commerce Commission is altogether too modest in asking for additional powers. Perhaps they do not want to initiate the discussion of this question of regulation of interstate commerce by the states, but it is the big question in the matter of regulation. There are millions of dollars going over the dam at the present time that ought to be saved to enable the railroads to deal efficiently with conditions as they exist and to meet more cheerfully all righteous demands of labor.

The financial center of the world may be transferred from London to New York. We ought to build up the export business of this country as we never dreamed before, but we cannot do it without efficient transportation, and that involves efficient regulation. The whole subject is bristling with points that a joint committee might consider and on which they ought to hear everybody who has any real information on the subject; so with the simple statement that I think there is an opportunity before you, gentlemen, such as you have never had in your experience in Congress, to do something constructive for your country—as Congress has already done a big piece of constructive work for the banks—I recommend most cordially to you the resolution for the committee of inquiry into the whole subject of regulation, that has come to you from the Senate.

ENGLISH RAILWAYMEN'S WAR BONUSES.—The president of the board of trade replying to a question in the House of Commons, recently, said that a sum approximating one-quarter of the first war bonus granted to railway employees who come within the Railway Conciliation Scheme is excluded from working expenses for the purposes of the agreement between the Government and the English and Scottish railway companies of whose undertakings possession has been taken by the Government under the Regulation of the Forces Act, 1871. This amount, therefore, is paid by the railway companies. This statement settles a question which had caused considerable conjecture on the part of the English railway authorities.

Reclaiming Material on the Seaboard Air Line

In Order to Be Continued, the Work Must Show that It Is Profitable; Accurate Records Kept of all Costs

On page 672 of the *Railway Age Gazette* for March 24, 1916, there was published an article on Supply Department Methods on the Seaboard. This department also has charge of the work of reclaiming material and what follows is a continuation of the previous article.

The purpose underlying the reclamation work on the Seaboard Air Line is that nothing shall be reclaimed that is not needed for use or that cannot be reclaimed at a substantial profit; and to insure this being done and to guard against incorrect showings, an accurate record is kept of each operation along conservative lines. The reclamation of large quantities of material for possible use may be neither desirable nor economical, but there can be no question regarding the value of reclamation work based on efficient inspection and accurate cost records. Indeed, considerable savings can be effected by the careful sorting and classification of scrap, without going so far as reclamation.

The work of reclaiming material on the Seaboard was

tion work, and its proportionate share of the overhead expense. One of these orders is included among the illustrations.

The scrap reclamation plant on this railway had its start in the supply train, which picks up and brings to Portsmouth at regular intervals all scrap which is obtained at various points along the road. When this scrap arrives at Portsmouth, it is immediately weighed and credit is at once given at a flat rate to the various division and operating accounts. It will be readily seen that one great value of the scrap being brought in at regular intervals by the supply train, is that it places the man in charge of the reclamation work in a position to know very closely what work he is going to have ahead of him so that there is no disrupting of his organization as would be the case if the scrap came in at irregular intervals and in irregular quantities.

In laying out the reclamation plant in the first place, the general plan decided on was to have the work progressive;

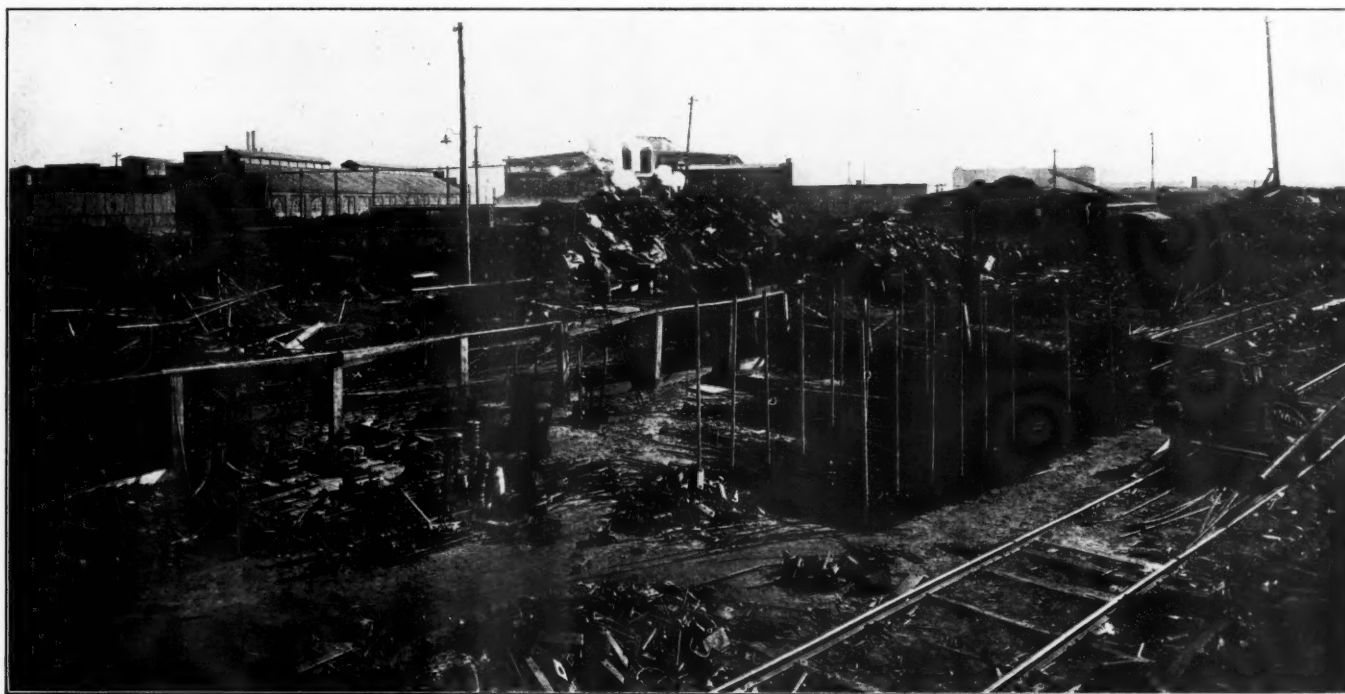


Fig. 1—The Scrap Yard Before the Reclamation Work Was Started

started in a small way about two years ago at Portsmouth. Before this time the scrap from the system had been collected at Portsmouth because of its being the gateway to the markets. No great amount of attention was given to the sorting of scrap and large quantities were sold as miscellaneous scrap. Among the illustrations will be found some which show the condition of the scrap dock at this time and others showing conditions as they exist now in exactly the same locality. As stated above, the idea has been from the start that in order to be perpetuated any particular work has got to show that it is profitable. A great many roads have gone into the work of reclamation without having any definite knowledge of what they are accomplishing. On the Seaboard, however, any articles or material reclaimed are covered by a reclamation order, to which are charged the value of the scrap, all labor in connection with the reclama-

tion work, and its proportionate share of the overhead expense. There is no unnecessary handling of any material, and all serviceable material which is picked out of the scrap is placed in the bins or racks shown in the illustrations.

When scrap is received at Portsmouth, if it is mixed scrap it is unloaded by means of a magnet crane at the places provided for this work, where it is sorted into the various classifications. The sorting is done directly into large buckets holding a ton or more of material and distinctly labeled for the different classes of scrap. These are then picked up by the crane and moved to the storage bins. These buckets are self-dumping, so that very little labor is involved. Special men are provided to see that all serviceable material which does not need repairing is sent direct to its proper rack, and

material which is to be reclaimed follows its course through the regular channels.

The oxy-acetylene torch is used in the cutting up of material in order to obtain higher scrap prices where it has been found economical to do this. Where it is not distinct economy, this is not done and it may be stated as an example

entirely satisfactory. At the beginning of the reclamation work, it was confined to the laying aside of all bolts that could be cut off and re-threaded. Because of having no shears at first, the bolts were sent to the shops for cutting off, but this was found expensive because of delays in the shops and the price of the labor employed to do the work.



Fig. 2—Scrap Yard and Reclaimed Material; From the Same Point as the View in Fig. 1

that it has not been found economical on the Seaboard to cut up old boilers for scrap in this way.

There are employed in the reclamation work at Portsmouth, a reclamation foreman and approximately 50 men, including the men in charge of the operation of the magnet crane and the various machines used. While it would, of course, have been desirable to have had special machinery purchased and special buildings erected for this reclamation work, no appropriation was available and small frame buildings were erected from scrap material, and they have been

A small shear was then purchased for this work and an air hammer fitted up from a discarded rock drill was made to serve the purpose of straightening bent bolts. On an average, from 35,000 to 40,000 bolts have been reclaimed per month. An average figure for this work is shown in the second line of the January, 1916, statement which is shown in one of the illustrations, the net saving, above overhead and all other charges, being \$541.03 for the month.

The reclamation work was gradually extended until it now includes the retapping of nuts, repairs to brake beams,



Fig. 3—The Scrap Pile Two Years Ago

the repairing and remounting of air and steam hose, the straightening of track spikes, the retempering of coil springs and the straightening of all wrought iron bars and locomotive and car parts, repairs to jack tracks and track drills, the rehandling of shovels, repairs to marker and classification lamps and the sorting of paper. It was found that many shops threw away large quantities of iron and steel borings and turnings which contained a small quantity of brass. A magnetic brass separator was purchased and through this

than if it were improperly sorted or disposed of as miscellaneous scrap.

A point which should be remembered in connection with the handling of reclamation work by the stores department is that handy men can be employed in any of the work, whereas if it is done by the mechanical department, which usually has an agreement with the various crafts, high priced mechanics have to be employed. The officers of the Seaboard feel that any road that does not take advantage of this is



Fig. 4—Another View Taken Before the Reclamation Work Started

machine are run all borings which have any quantity of brass in them. In connection with the repairing of brake beams, it might be mentioned that for two years after the reclamation work was started it was not found necessary to purchase any new brake beams.

The statement of operation at the reclamation plant for January, 1916, shows a net total saving of \$8,704.62, but this amount does not take into consideration the additional savings due to the proper sorting and classification of scrap, for which considerably higher prices per ton are obtained

losing an opportunity to increase the amount of the savings for the company.

Arrangements have already been made for the reclamation of rail, a friction saw having been secured for cutting off the broken ends, a drill provided for redrilling, and a rail straightener is practically completed. It is believed that a large saving can be made by the reclamation of rail because the Seaboard is in a position to sell to many lumber companies rail that cannot be used on its own lines. Considerable savings have already been realized, even without



Fig. 5—The Same View Today as That in Fig. 4; the Reclamation Buildings are Shown in the Background

the aid of machines, as may be seen from the January, 1916, statement.

A washer machine of the latest type is already on order

appreciated of a reroll for use in reclamation work, because of financial conditions and the fact that there was not sufficient scrap laid aside to keep the reroll busy, the Seaboard

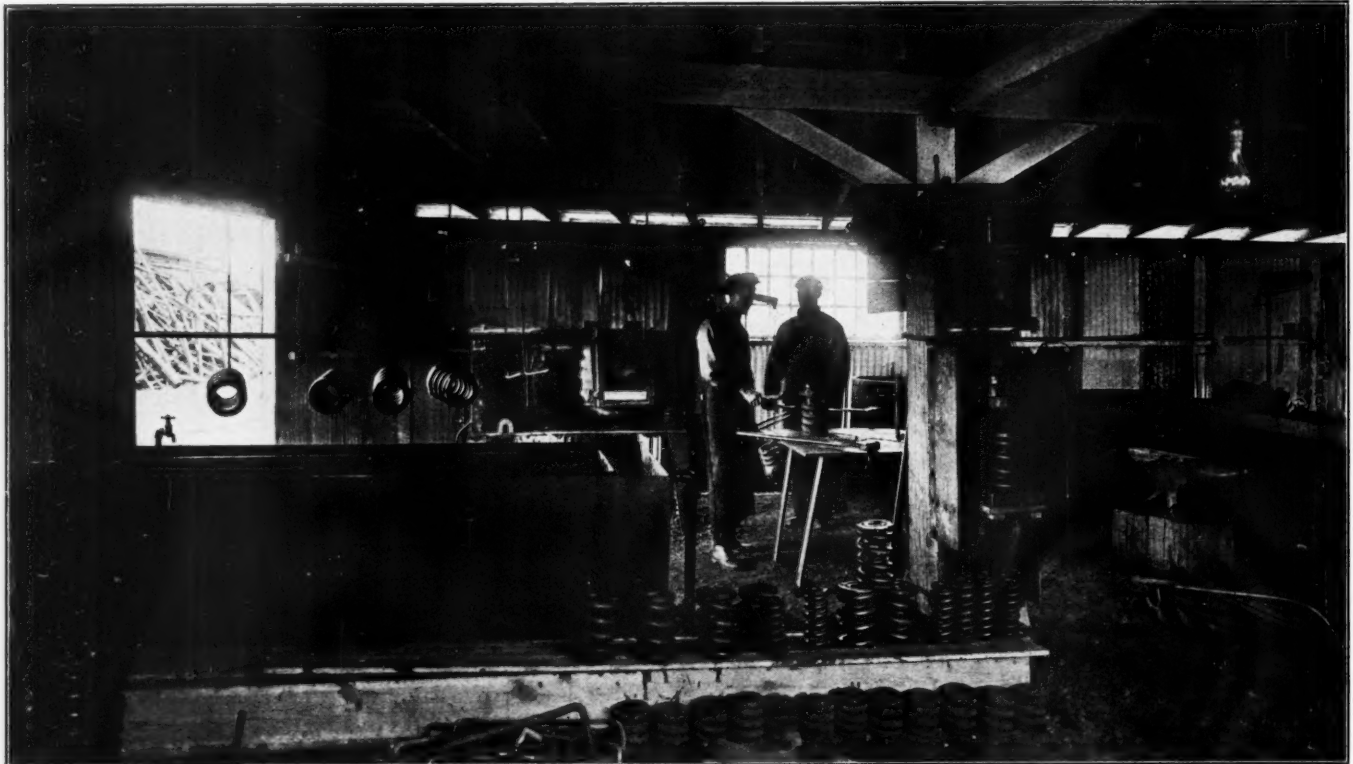


Fig. 6—Furnace, Oil Bath and Air Cylinder for Retempering and Testing Coil Springs

and it is intended on its receipt to commence the manufacture of all the washers required on the entire system, from scrap sheet material and scrap tubes. While the value is

officers did not consider the expenditure for such equipment justified up to the present. For some time, however, bar iron suitable for rerolling has been laid aside until there



Fig. 7—Straightening and Cutting Bolts; the Hammer Is a Repaired Rock Drill

is now available over one million pounds, and application has been made for the purchase of a reroll in order to rework this material. Based on the amount of scrap bar iron now on hand and what will be reclaimed by the time the

in every case the cost of the machine was saved in from 30 to 60 days.

For some months past all paper has been collected from the general office building, and also from all agencies along

SEABOARD AIR LINE RAILWAY

RECORD OF MATERIAL RECEIVED AT RECLAMATION PLANT

PORTSMOUTH, VA. J A N U A R Y 1916

CLASS OF MATERIAL

CAR

DATE

Way Bill Number

WEIGHT

FROM

Credit Given

REMARKS

Initial

Number

Rec'd

Un-loaded

Gross

Tare

Net

Mechanical Scrap(misc.)	SAL	30000	1/2	1/3	L Co 5	60 100#	28 000#	32 100#	Savannah Shops	Jany Acct.	
Roadway Scrap	"	35365	1/5	1/6	L Co 8	55 200	25 000	30 200	Georgia Divn.	" "	
Rail Scrap	"	22100	1/6	1/10	L Co 12	58 000	28 000	30 000	" "	" "	
Scrap Loco. Tires	"	28400	1/10	1/11	-----	78 100	30 100	48 000	Jacksonville Shops	" "	
Scrap Angle Bars	"	25226	1/12	1/13	-----	73 200	26 700	46 500	Virginia Divn	" "	

Fig. 8—Form Showing the Method of Keeping a Record of the Material Received at the Reclamation Plant

reroll can be received and set up, it is estimated that a net saving of \$12,000.00 can be made the first year. It is believed that this is a particularly opportune time to have such equipment, because of the scarcity and high prices of steel

the road by the supply train. This paper has been brought into Portsmouth and baled. While no great saving has been made, it is felt that the moral effect of having the paper picked up has proved beneficial in keeping before all em-

Form 186

SEABOARD AIR LINE RAILWAY

STATEMENT OF OPERATION AT RECLAMATION PLANT

PORTSMOUTH, VA., January 1916

Reclamation Order No.	CLASS OF MATERIAL	Number Reclaimed	Weight	C O S T				New Value	Saving	REMARKS
				Labor	Material Inc'l Scrap	Overhead	Total Cost			
1 & 2	Air Hose	12 11		\$ 56 20	\$752 72	10 62	\$819 54	\$1937 60	\$1118 06	
3 & 4	Machine Bolts	350 73	647 59#	138 74	410 93	7 32	556 99	1098 02	541 03	
5 & 6	Hex. & Sq. Nuts, Kegs	1 15	230 00#	86 15	147 54	4 11	237 80	618 68	380 88	
8 & 9	Steam Hose	2 78		61 93	328 28	7 42	397 63	1112 00	714 37	
10 & 11	Signal Hose	2 84		4 70	138 40	2 20	145 30	426 00	280 70	
12	Jacks and Drills	66		43 22	114 22	2 20	159 64	326 50	166 86	
13	Shovels	95		22 34	7 80	48	30 62	38 00	7 38	
16	Misc. Car & Loco. Material	--		157 98	204 85	13 50	376 33	2035 43	1659 10	
112	Monarch & Sterlgwth. Brk. Beams	2 43		122 95	182 66	29 52	335 13	486 00	150 87	
114	Miscellaneous brake Beams	2 45		42 56	270 32	16 41	329 29	490 00	160 71	
	Brass Boring reclaimed by Brass Magnet Separating Machine (21701#)		100 00#	14 00	650 00	4 10	668 10	1325 00	656 90	
	Springs Reclaimed						943 73	1352 85	409 12	
	Rail Reclaimed from scrap and sold to Lumber Companies						3980 79	6439 43	2458 64	Profit made credited to Operating Acct.
TOTAL				\$3930 89	\$17685 51		\$8704 62			

cc-W. J. Harahan, President
 H. W. MacKenzie, Comptroller
 H. C. Pearce, General Purchasing Agent.

CORRECT:

D. D. Cain,
 General Storekeeper.

Fig. 9—Statement Showing the Results of Operating the Reclamation Plant during January, 1916

products due to the conditions caused by the European war. It should also be stated in connection with the new machinery which has been installed for reclamation work, that

employees the fact that no material must be thrown away, and in the case of station agents in particular, it has been an added incentive toward keeping stations and grounds clean,

Serviceable material is drawn from the reclamation plant in exactly the same way as new material is drawn from the stores. The difference between the new value and the scrap value plus labor costs of any material obtained from the reclamation plant is at once credited to the operating department, leaving the charge against them practically that of scrap. All departments are, of course, anxious to avail themselves of this reclaimed material as it reduces the material charges against them.

SEABOARD AIR LINE RAILWAY CO.		
RECLAIMED MATERIAL ACCOUNT		
AIR BRAKE HOSE 1-3/8 in. (Stripping and Mounting. Also includes Repairing Couplers and Nipples.)		
Detail of Orders -- January 1916		
NEW MATERIAL USED		
	QUANTITY	VALUE
Air Hose Blanks	1211	\$643.78
Machine Bolts -- Miscellaneous sizes	----	10.50
Air Hose Clamps	2422	75.06
Air Hose Gaskets	1211	18.53
Brace Bits	2	1.90
Nails -- lb.	2	.05
Drill Bits	5	1.39
Gasoline -- gal.	1 1/2	.18
Waste, C.C. -- lb.	4	.18
Set Screws	2	.05
Rubber Cement -- gal.	2-1/3	1.08
Total		\$752.72
Labor Charges		56.20
Overhead Expense		10.62
		\$819.54
MATERIAL FROM SCRAP DOCK		
Air Hose Couplings (Reclaimed)	1211	
Air Hose Nipples (Reclaimed)	1211	

Fig. 10—Reclamation Order, Showing Itemized Charges

The illustrations include several forms used in the reclamation work; two of these, the ones showing the record of material received at the reclamation plant, and the record of scrap material shipped from the plant, contain but a few items in order to give an idea of how these records are kept. It will be seen in the case of the reclamation orders that

road. The statement for January is given because it was the most recent obtainable, but much larger savings have been realized in some previous months. Moreover, the officers feel that the progress made up to present time has been made on a sound basis, that actual economy is being real-



Fig. 12—The Reclamation Buildings; the Motor Truck Is Used for Moving Material

ized, and that still greater savings will be made as the work develops.

The general plan of organization under which the purchasing and storekeeping of the Seaboard Air Line has been carried out during the past three years, originated with the president, W. J. Harahan. The work is under the direction of H. C. Pearce, general purchasing agent, and D. D. Cain, general storekeeper.

NEW RAILWAY OPENED IN BESSARABIA.—A new line of railway was opened in the Bessarabia Government on De-

Form 1853

SEABOARD AIR LINE RAILWAY													
RECORD OF SCRAP MATERIAL SHIPPED FROM RECLAMATION PLANT													
PORTSMOUTH, VA., J A N U A R Y.....1916													
Sale Order Number	Date of Order	SHIPPED		CAR		Date Shipped	WEIGHT				REMARKS		
		TO	AT	Initial	Number		Gross	Tare	Net				
2001	1/3	Jones, Jno.J.	Philadelphia, Pa.	SAL	32808	1/5	98 200#	30 000#	68 200#				
2010	1/5	Smith, J.H.	Lebanon, Pa.	PRR	78392	1/8	100 600	40 000	60 600				
2015	1/6	Johnson, R.T.	Cumberland, Md.	B&O	75000	1/9	101 300	38 200	63 100				
2018	1/10	Evans, H.D.	Reading, Pa.	P&R	60720	1/13	99 700	37 600	62 100				
2025	1/12	Wilson & Co	Pittsburg, Pa.	PRR	80600	1/14	104 800	42 000	62 800				

Fig. 11—Part of the Record of Scrap Material Shipped from the Reclamation Plant

each one includes in detail all charges for labor, material including scrap value, and overhead.

The plant employed for reclaiming material at Portsmouth is inexpensive and can easily be duplicated on any

cember 20, viz.: from Akerman to Leipsigskaya, a distance of about 94 miles. The service is for both passenger and goods traffic and there is one train a day each way now in operation.

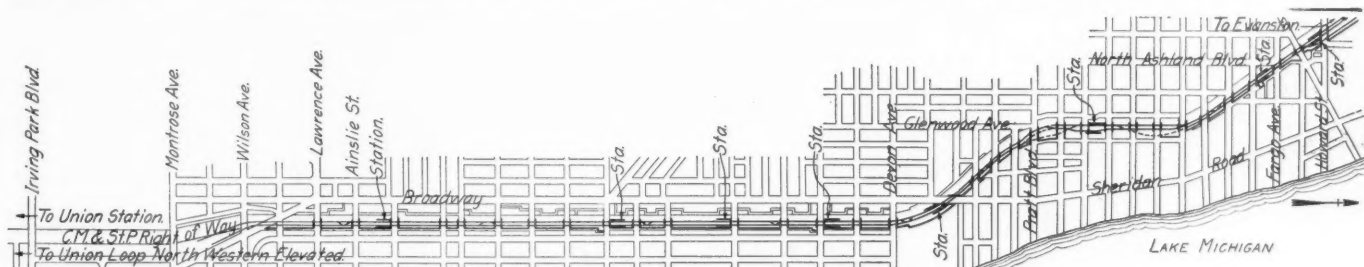
An Interesting Track Elevation Project

A Description of the Work Involved in Three and One-Half Miles on the Evanston Branch of the C. M. & St. P.

Further progress in grade crossing elimination in the city of Chicago was marked recently, when the Chicago, Milwaukee & St. Paul transferred the trains of its tenant, the Northwestern Elevated, to the new elevated tracks for $3\frac{1}{2}$ miles in the residence sections of Rogers Park and Edgewater in the northern part of the city. This work is part of a project to elevate the tracks of the Chicago & Evanston division of the St. Paul, from Irving Park boulevard to Howard street, the city limits, a total of $4\frac{3}{4}$ miles. Aside from the novelty of the completion of so large a stretch of

placed by the rapid transit service of the "Elevated" on all of the line north of Wilson avenue, although the St. Paul retained the right to operate switch engines and transfer trains over the same district to serve numerous industries, particularly in Evanston.

Accordingly an incline was built terminating at Ainslie street, and the "Elevated" trains commenced operation on the surface north of that point in May, 1908. The increased frequency of train service resulting from this change was partly responsible for agitation for the elevation of the



Map of the Track Elevation District

elevated structure in a single step, the work is of interest because of the extensive use made of reinforced concrete subways, no less than 30 out of a total of 35 subways being of reinforced concrete. The work is notable also for the fact that the layout of the work presented certain advantages which were utilized for the institution of unusually efficient construction methods.

The Chicago & Evanston division of the Chicago, Milwaukee & St. Paul extends from the Union Station, Chicago, to the northern limits of the city of Evanston, a distance of 14 miles. As it is the nearest line to the lake front north

tracks of both the St. Paul and the Chicago & North Western in Evanston, upon which work was commenced almost immediately. About the time this work was completed, 1910, similar agitation led to the passing of an ordinance by the city of Chicago requiring the St. Paul to continue the elevation of its tracks south from the Evanston city limits as far as Irving Park boulevard, in Chicago, a distance of about $4\frac{3}{4}$ miles, to be completed July 11, 1917. It is to be noted that one mile of this work, from Lawrence avenue to Irving Park boulevard is south of the junction with the elevated railway, and is, therefore, not used by the elevated trains.



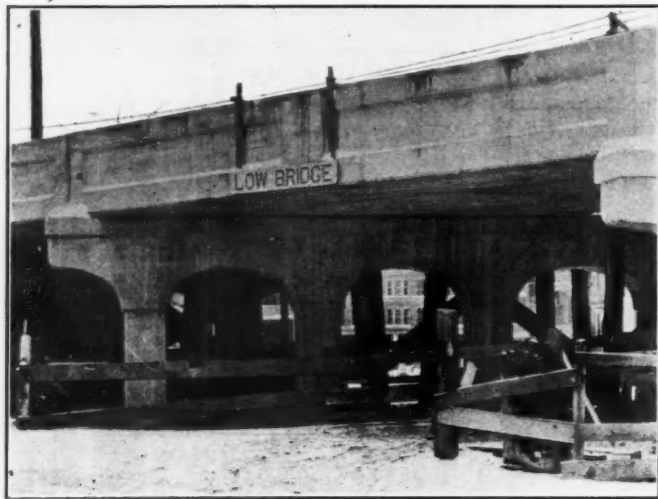
Sheridan Road Subway During Construction

of the business section of Chicago, it passes through a high grade residential district which it served for many years as a suburban passenger line, in addition to handling a considerable amount of switching service. In 1907, the Northwestern Elevated, the northern terminal of whose four-track elevated railway structure is located at Wilson avenue adjacent to the right-of-way of the St. Paul, arranged with the steam road for the lease of its lines north from Wilson avenue to the end of the line in Evanston. According to this arrangement, the passenger service of the St. Paul was re-

This portion of the line was included in the ordinance because it furnished the only suitable location for a run off.

It is seen on the accompanying map that part of the line between Irving Park boulevard and Devon avenue, a distance of 3 miles, is practically on a tangent parallel with the north and south city streets. North of Devon avenue the line takes a northwesterly direction, although for a distance of 6 blocks it is parallel with and in the center of Glenwood avenue. In a large part of the distance the line, therefore, crosses the streets at right angles, and the streets being

largely of uniform width, a standardization of subway design has been possible to a much greater extent than is usually the case. Between Lawrence avenue and Devon avenue, the construction is particularly uniform and the part thus far completed consists of two tracks, one on an embankment, the other on a trestle; and both adjacent to the east right-of-way line, which borders on an alley, and from which it is separated by a full height retaining wall. Similar construction with minor modifications is used on the portion of the line north of Devon avenue, while south of Lawrence ave-

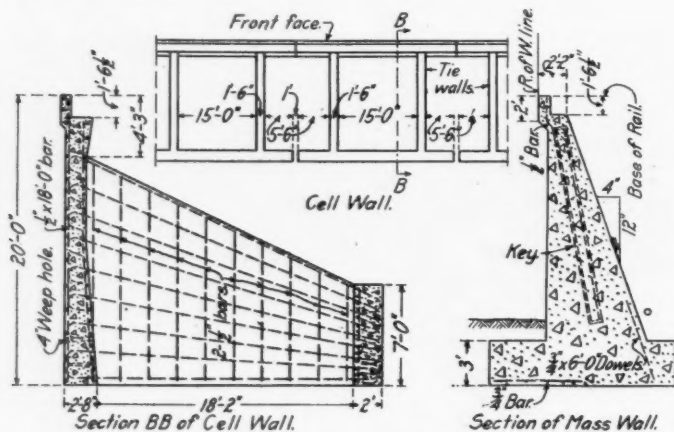


Detail of a Skew Street Subway

nue, the construction has not yet been started, and will be of a materially different character.

STRUCTURES

The typical concrete subway consists of four spans of reinforced concrete slabs, supported generally on mass abutments at the street lines and three lines of reinforced concrete columns, one at each curb and one at the center line of the street. This same general design has been used extensively on the Chicago, Milwaukee & St. Paul, commencing with the 14 subways required for the track elevation in



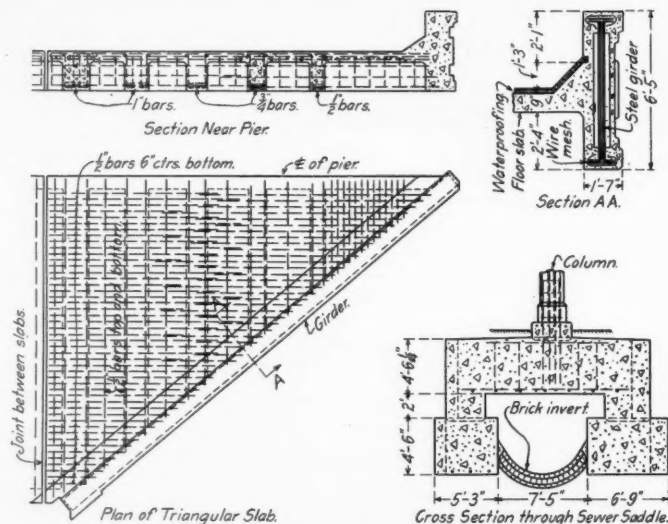
Details of Retaining Walls

Evanston and built in 1909. This type has been found to combine economy, permanence and good appearance in a way that makes it particularly applicable for track elevation subways in any case where a sufficient number of lines of supports are permitted between street lines to give clear span lengths generally not much, if any, in excess of about 24 ft. The slabs are of the usual type of reinforced concrete trestle slabs. The intermediate supports each consist of a row of concrete columns joined at the top by a cross

girder having the form of a series of three-centered arches, and at the bottom by another girder forming a monolithic stiffening rib for the footings. In some cases, the footing for the bent at the center line of the street interfered with a sewer, introducing a problem which was solved by the use of a sewer saddle, as shown in an accompanying drawing.

The retaining wall previously mentioned is of the mass type which, through a customary provision of the track elevation ordinances in Chicago, has a footing which projects a considerable distance beyond the alley line. Thus a much more economical design of wall is obtained than would have been possible with a footing entirely behind the right-of-way line.

Between Sheridan road and Devon avenue, the retaining wall along the east right-of-way abuts on private property, and it was impossible to provide the toe extension mentioned above. This condition precluded the use of the mass retaining wall on natural foundations, with the result that the cell type of wall shown in one of the accompanying drawings was adopted. This design of wall was described in the *Railway Age Gazette* of March 5, 1915, in an article entitled, "Retaining Walls on Soft Foundations." In this case, however, better foundations were available and it was possible to apply this type of wall to much greater heights than was found practicable in the case previously described.



Details of Sheridan Road Subway

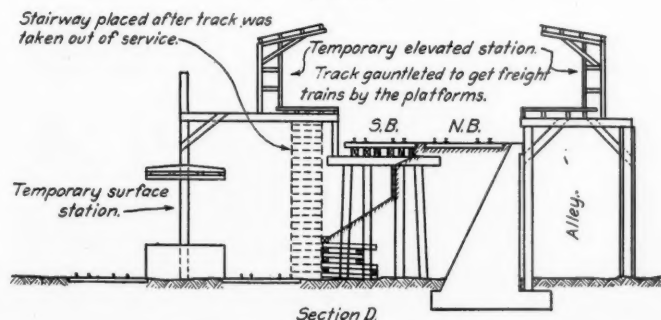
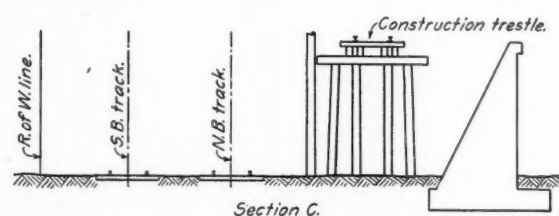
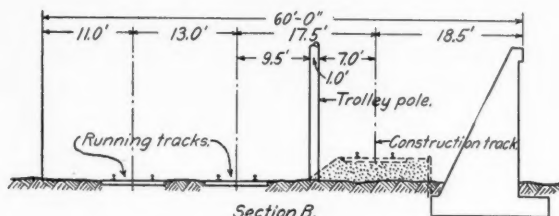
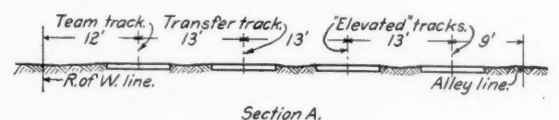
At the intersection of Fargo and Ashland avenues and at Pratt boulevard structural steel, through girder subways with transverse I-beam floors have been provided. This form of construction was used particularly at the former crossing because of the complications resulting from the skew crossing over the intersection of these two streets.

The crossing of Sheridan road, on a curve and a skew of approximately 45 deg, did not prevent the use of reinforced concrete at that point, although its application involved a material departure from the standard construction used at the other subways. The external appearance is much the same, the bents forming the intermediate supports in the streets being of the same type as those used in the other subways except that the columns are spaced further apart. In the superstructure, the simple flat slabs of the standard design were replaced by T-beam slabs, consisting of beams 2 ft. 2 in. wide, and 3 ft. 1 in. deep spaced 5 ft. center to center, spanning perpendicular between the supports and connected by slabs 9 in. thick. On account of the skew, part of the T-beams are carried by girders, along the two faces of the structure approximately parallel to the tracks. Because of the skew, the length of the girders in the roadway span is 51 ft. 9 in. and the girders consist of steel lat-

ticed trusses encased in concrete. They have a total depth of 6 ft. 5 in., forming in effect parapets, extending above the level of the base of rail. The concrete encasing the latticed girders was cast monolithic with the T-beam slabs, the reinforcement of which makes adequate connection with the steel girders in a manner insuring thorough monolithic action of the structure.

CONSTRUCTION PROGRAM

In most track elevation work it has been customary to carry on the work progressively from one end, turning traffic over the new construction upon the completion of sections, ordinarily from one to two miles in length. In this case, traffic conditions were such that it was preferable to provide two tracks complete at the new level for a length of $3\frac{1}{2}$ miles (as far as it will be used by the elevated trains) before transferring operation to the new elevation. At the



Cross Sections Illustrating Construction Program

inception of this work the elevated trains were operated on a double-track line, as shown in cross section A in the accompanying sketch, with an interval between trains during daylight hours varying from 4 to 6 minutes. In addition to this the St. Paul maintained switching service for 18 industries located at various points between Lawrence and Devon avenues, for which a separate running track was provided west of the "Elevated" tracks. There are no industries between Devon avenue and the Evanston city limits, but transfer trains serving industries in Evanston run over the tracks used by the "Elevated" between those limits. As there is ample right-of-way, generally 60 ft., it was decided to arrange the initial construction so that a four-track line could ultimately be developed, should increases in the traffic so require. This decision and the fact that all the industries between Lawrence and Devon avenues are located on the west side of the right-of-way, made it desirable to shift

the operated track as far toward the west side as possible, and complete the elevation of two tracks next to the east right-of-way line. To this end work was carried out as shown in cross section B. One operated track was eliminated, the switch engines and transfer trains using the same tracks as the "Elevated." A single track was retained on the east side of the right-of-way, for construction purposes.

This plan required the use of the retaining walls along



Typical View of Trestle and Timber Crib Used to Support Embankment

the east side, as previously mentioned, and a construction trestle located far enough west to permit a track on the embankment between the trestle and the wall. This is shown in section C. By using a tie crib retaining wall, supplemented by planks placed between the piles of the trestle and by anchoring the trestle to the retaining wall, with wires it was possible to retain the embankment for one track without interfering with the tracks on the surface. A modification of this plan was required on the portion of the line



One of Two Cross-over Bridges at Glenwood Ave. The Cross Braces Have Been Added Since the Surface Operation Was Abandoned

located along Glenwood avenue. Here it was found desirable to place the elevated line on the west side of the temporary surface tracks, with the result that an overhead bridge was required at the curve at each end of this stretch of track. Owing to the flat skews involved in these crossings rather elaborate temporary bridges were constructed, and

on account of the greater clearance necessary to permit the operation of trains underneath the structures a "hump" or raise in the grade was made in the elevated line at these points.

ORGANIZATION AND CONSTRUCTION METHODS

The construction work is being done entirely by the railway company forces, the organization and equipment having been transferred from the Bloomingdale Road Track elevation, another large project recently completed by the St. Paul, in Chicago. As the two pieces of work are largely of the same character, the experience gained and the methods developed in the earlier project have proved valuable in carrying out the work of the later one, in a most efficient manner. The construction equipment includes five concrete mixers mounted on cars, a track pile driver, and two 15-ton locomotive cranes. Three of these mixer cars have end-mounted mixers for discharge by spouting directly into forms below the level of the track, or into buckets in which the concrete is transferred to the forms by a locomotive crane. Another of the mixer plants is equipped with a folding steel tower for elevating the concrete, while the fifth one is a drag-line plant built for use on this and the Bloomingdale Road work. An A-frame is provided on the mixer car to support cables for a drag-line bucket which moves back and forth over five concrete material cars located between the mixer car and another car, also equipped with an A-frame and a hoisting engine. The bucket transfers material from the cars to a storage bin on the mixer car, and thus practically eliminates manual labor in handling the concrete material.

The favorable conditions under which the work was conducted on this project afforded excellent opportunities for a large output of the mixers. An average of 150 cu. yd. of concrete per 10-hr. day was set as a standard minimum output for each concrete gang. The best day's work for one mixer was 221 cu. yd. in 10 hrs. From three to five mixers were in constant operation during the construction season. The work has also afforded an excellent opportunity for the comparison of the three types of mixing plants. In general it has been found that the capacity of the three types is about the same, depending more upon the capacity of the mixer than the rate at which the concrete can be received in the forms. In economy, the drag line plant gives materially better results than the others, because of the small number of men required to do the work. The plant with the tower for all cases where the concrete must be elevated to reach the forms is more economical than the three plants not so equipped.

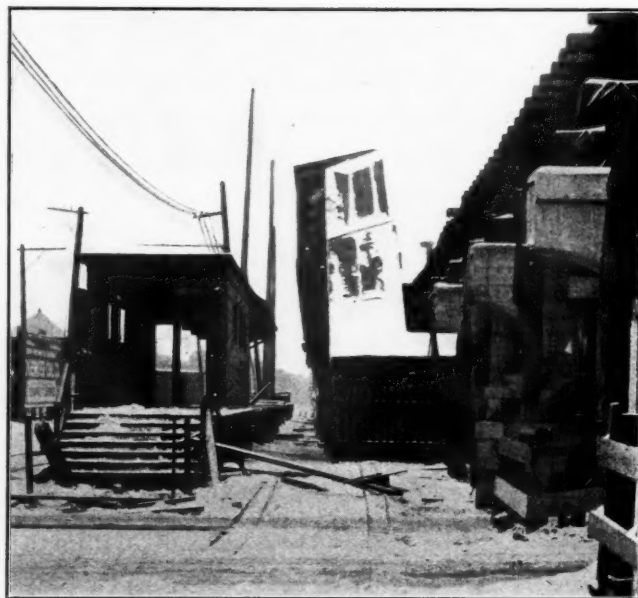
Sectional concrete forms have been an important item on this work. From the experience gained on the Bloomingdale road work a wooden sectional form of very simple design was devised for use on the long retaining wall for which the unusual record for wooden forms of 15 re-uses has been secured. These forms are plain except for a coping at the top, they are 16 ft. high and 25 ft. long, and are made of 2-in. D. & M. sheathing on studs 18 in. center to center with horizontal wales 3 ft. 6 in. center to center, the studs and wales being securely bolted together. There are no movable parts, variations in the height of the wall being made at the bottom, either by building a low form in place on the footing or by splicing a temporary section on the bottom of the movable form, or by laying a sill of suitable thickness on the footing in case the variation is small.

A set of steel forms was provided for the reinforced concrete bents of the street subways, the cost of which will be well distributed, as it is expected that they will be used about 25 times. The two locomotive cranes were used for excavating with a clamshell bucket and for loading and unloading material, switching cars, hoisting concrete and moving the sectional forms.

Owing to the duplication of the work, block after block, it was possible to follow a systematic program to an extent rarely practicable in railroad construction. The work was started at the south end near Lawrence avenue and continued progressively northward to Howard street, each step following in turn, and the performance of each gang being repeated in each block as it moved northward.

The first work was the excavation for the foundation of the long retaining wall. This was a simple matter as the foundation material is good, firm sand. No foundation piles were required on the entire work. The soil was disposed of by throwing it on to the construction track to the west, which was raised on it as required. The excavation was followed by the concrete for the footings and later by the neat work of the wall, using concrete trains operating on the construction track.

The concrete plants were followed by a pile driver driving piles for the construction trestle. The driver backed away from the piles as the driving progressed, the construction track being torn up at the same time, leaving the rails alongside for use on the trestle as it was constructed. The piles were distributed in advance and a daily output of 90



Temporary Elevated Station and Trestle, on the Right; Abandoned Surface Station, on the Left

piles was made regularly. A gang sawing off the piles and capping them was followed by a decking crew of 14 men that completed an average of 300 ft. of deck per day. This crew was supplied at the end of the trestle each morning with a train of four cars, consisting of an idler car in front, followed in order by a carload of stringers, a carload of ties and an air-compressor car. The idler car provided an adjustable incline on which the stringers were rolled on dollies from the stringer car out onto the deck of the trestle. After all the stringers were unloaded, the ties were carried out, one at a time, and finally the rails were pulled up from the ground by hand lines. All drilling for drift pins and bolts was done with air driven tools for which the compressor car was provided.

With the completion of the trestle, work was started on the street subways, beginning at the south end. The spoil from the excavation was wheeled back behind the street lines and deposited under the trestle. This excavation, together with that from the retaining wall excavation, amounted to 35,000 cu. yd. The subway structures were concreted complete for two tracks except the superstructure for the west track, where the stringers of the trestle interfered with

the construction of the slabs. If it is decided to complete only two tracks at this time these slabs will be concreted later by cutting out sections of the west track by means of cross-overs for a sufficient length of time to do the concrete work and to allow for curing. If the third and fourth tracks are constructed the slabs for the second track will not be concreted until traffic can be turned over the completed third or fourth track.

Owing to the lack of space for a construction yard, it was necessary to make use of a yard located at a distant point in the Chicago terminal. This fact, together with a condition of simultaneous work extending over a stretch of $3\frac{1}{2}$ miles necessitated a carefully devised scheme for despatching the material to the work. Each day a trainload of material was made up at the material yard for use the next day on the work. This train arrived early in the evening at Buena Park, located just north of Irving Park boulevard, where some spare tracks were available for doing the switching necessary to make up the concrete trains, etc. Switch engines then spotted all the concrete trains and material cars for the next day's work. This arrangement applied also to the form lumber, hardware and reinforcing bars, which were delivered cut and bent ready for placing. Including the preparation of the reinforcing bars, the material yard required the employment of about 50 men. In a similar manner, the trains of filling material consisting of from 90 to 150 cars were delivered each day, and during the following night were placed on the construction trestle ready for unloading the next day. All unloading was done with a Lidgerwood and side plows.

TRANSFERRING THE TRAFFIC TO THE NEW LINE

Eight passenger stations are required by the Northwestern Elevated service, for which temporary wooden passenger stations were provided at the time service was extended. The shifting of the tracks for construction purposes necessitated the building of new temporary stations and platforms, as shown in section D of the accompanying drawing. It also shows the temporary platforms provided on the elevated structure, which will be used until the construction work has been carried to a point that will permit the building of the permanent stations and structures. The permanent stations will be housed in extensions of the street subways back of the street lines, the construction being similar to that in the streets. As seen in the section referred to above, arrangements for taking care of the passenger traffic on the overhead structure could be completed without interference with the traffic on the lower level, with the exception of the stairways leading to the platform serving the southbound or west track. These stairways come inside the operating space for the temporary northbound track on the surface.

The change to the upper level was made on January 6, due notice being given to the public by the posting of circulars, and was accomplished with a minimum of interference with traffic by making the change complete after the time of the morning rush, and before the evening rush had commenced. The northbound traffic was transferred to the new level about 10 o'clock in the morning. This released the space occupied by these trains on the surface and permitted the erection of the stairways leading to the platforms for the southbound track. As these stairways had been made ready in advance they were in place by 3 o'clock in the afternoon, when the southbound traffic was also transferred to the upper level. The switching operations between Lawrence avenue and Devon avenue will be continued on the surface until the construction work between these limits can be completed.

This work was started in June, 1914, but was discontinued between August, 1914, and May, 1915. With the

opening of the construction season in the spring, it is expected to complete such portions of the work as were interfered with by the operation of the trains on the surface, and elevate the part of the line between Irving Park boulevard and Lawrence avenue.

The design and construction of this work is being carried on by the engineering department of the Chicago, Milwaukee & St. Paul, under the general direction of C. F. Loweth, chief engineer; A. G. Holt, assistant chief engineer; H. C. Lothholz, engineer of design, and C. N. Bainbridge, office engineer. The construction is under the immediate direction of C. H. Buford, assistant engineer, with F. C. Loweth and J. E. Weston as assistant engineers.

THE SMALLER CARRIERS AND THE FEDERAL VALUATION

By De Witt V. Moore

Consulting Engineer, Chicago, Ill.

While not an arbitrary rule, it is customary for the government parties engaged in the Federal valuation of railroads to digress from the main line of the larger carriers under inventory to include the field work of the smaller carriers diverging therefrom in the progress of work as they are encountered. The small carriers should awake to the importance of a proper and adequate preparation in anticipation of such field work, the proper supervision of the field work and a continuing supervision through the office process of assembling the inventories and a recognition of the values entering into the property other than those revealed by the field notes.

In the following table, the attempt has been made to eliminate Canadian and Mexican mileages, also, where known short line carriers which, while independently listed, are really a part of the larger carrier systems. In general, electric lines have been omitted but where such lines are operated largely as freight carriers, they have been included.

While considerable time was expended and care taken to make this statement as nearly correct as possible, still it may be considered as only indicative of general conditions. The total mileage given must of necessity contain some duplications as in many cases the mileages given include operated miles of line as well as line owned.

RAILROAD MILEAGE IN THE UNITED STATES.

Road miles		Total	Accumulative	Number	Average	Per cent	Accumulative
From	To	miles such	total	of	mileage	of total	per cent
		carriers	miles	carriers		mileage	
0	25	6,693	.....	561	12	2.42	.....
25	50	8,592	15,285	251	35½	3.11	5.53
50	100	10,954	26,239	157	70	4.00	9.53
100	200	12,456	38,695	92	135½	4.51	14.04
200	500	25,471	64,166	79	322½	9.23	23.27
500	1,000	19,522	83,688	28	700	7.07	30.34
1,000	2,500	48,402	132,090	30	1,613½	17.54	47.88
2,500 and over.		143,373	*275,963	27	5,330	52.12	100.00
Total.....		*275,963	.....	1,225	.....	100.00	.....

* Some duplication.

This statement should awaken the owners of small properties to the importance of prompt action. The aggregate mileages and percentages of the whole are comparatively large but without regard to this feature the individual owner of a small property should note that now is the time to conserve the values in his railroad property.

In a great many cases these properties are incidental to larger interests in the way of lumber tracks, mines, etc., and therefore, the incidental feature of the railroad serving the property is not properly considered. There is no doubt but that the government will do all in its power to give these carriers proper consideration and the full benefit of the valuation experience gained on the larger carriers. It is also true that the chief engineers and valuation engineers of the larger carriers are willing to serve the owners of the

small properties by advice and suggestions in connection with valuation matters but neither the government forces nor the valuation departments of the larger carriers are in a position to neglect their larger problems to give particular attention to a minor property and yet the owner of such property is particularly interested in the preserving of his investment. These small carriers of to-day may be the connecting link in a larger property within a short number of years or they may be absorbed as a part of a larger carrier system. All initial inventories now being made should be so prepared that if at some future date this property should form a part of some such larger scheme, the values may be found to be properly recorded.

THE FABLE OF CONGRESS, THE LEGISLATURE AND THEIR RAILROAD

By Blewett Lee

Congress and his Son, the Legislature, were driving their Railroad to the fair at Wall Street to sell him. They had not gone far when they met a troop of farmers returning from the town, talking and laughing.

"Look here!" cried one of them. "Did you ever see such fools, to be trudging along on foot, when they might be riding? Why, that Railroad could be made to carry anybody for two cents per mile."

Congress, when he heard this, bade his Son, the Legislature, to get on the Railroad, and walked merrily along by his side. Soon they came to a group of old men, talking gravely.

"There!" said one of them; "that proves what I was saying. What respect is shown to old age in these days? Do you see that idle young rogue riding, while his Father has to walk? Get down, you scapegrace, and let the old man get on. Can't you see that the Railroad is engaged in interstate commerce?"

Upon this, the Legislature got down from the Railroad and Congress took his place. Nevertheless, the Legislature liked to ride on the Railroad so much that he couldn't stay off very long, and soon took his place behind the old man's back. They had not gone far when they overtook a young son of Congress, called the Interstate Commerce Commission, and with him was a company of women and children.

"Why, you lazy fellows!" cried several tongues at once. "How can you ride upon that Railroad, when that poor little lad there can hardly keep pace by the side of you?"

So, good natured Congress took his son, the Interstate Commerce Commission, also up behind him. They had now almost reached the town, when they met a husky young fellow, called the State Railroad Commission. He did not wait for an invitation, but climbed right up behind without more ado.

"Pray, honest friend," said a townsman, "is that Railroad your own?"

"Yes," said Congress, "it is true that other people paid for it, but I feel just the same as if I owned it."

"I should not have thought so," said the townsman, "by the way you load it. Why, the four of you are better able to carry the poor thing than it is to carry you, and none of the others can ride without your permission."

"Anything to please the people," said Congress. "We can but try."

So Congress, the Legislature, the Interstate Commerce Commission and the State Railroad Commission got down from the Railroad; then they tied its legs together and all four, taking a stout pole, tried to carry it on their shoulders over a bridge called Net Earnings that led to Wall Street.

This was so odd a sight that crowds of people ran out to see it and to laugh at it. The Railroad, not liking to be tied, kicked the cords away, and tumbled off the pole and was

drowned in Insolvency. At this, Congress and the Legislature, and the Interstate Commerce Commission and the State Railroad Commission hung down their heads and made their way home again, having learned that by trying to please everybody, they had pleased nobody, and had lost the Railroad in the bargain.

Moral: Let only one ride.

SOUTHERN RAILWAY SERVICE MEDALS

The action of the Southern Railway in awarding 1,758 medals to officers and employees who have been in the service of the company 25 years or more, was noticed in the *Railway Age Gazette*, March 17, page 516. A photographic reproduction of one of the medals is shown herewith.

President Fairfax Harrison has given out the medals in person, having visited Alexandria, Va., on March 16; Greensboro, N. C., March 17; Charlotte, N. C., March 18; Atlanta, Ga., March 19; Birmingham, Ala., March 20; Knoxville, Tenn., March 21, and St. Louis, Mo., March 22. At Birmingham medals were given to 146 employees of the Birmingham and Mobile divisions; and the man at the head of the Birmingham list was Taylor Parkman, colored, a hammer man in the shop at Selma, who did his first railway work in 1858, when a slave. He was owned by the



Southern Railway Service Medal

Alabama & Tennessee River Railroad Company, now a part of the Mobile division of the Southern.

The medal is of bronze, designed by Victor Brenner, of New York. The obverse bears the inscription, "Southern Railway Company; For Loyalty." The scene is a section of the Southern's double track railroad, with automatic signals, in the mountains of North Georgia. The reverse of the medal, shown at the left, bears three symbols of modern railroading; a telephone despatcher at his desk, a gang of track repairmen at work on the roadway, and a power press, representing the shop crafts. On this side of the medal is to be engraved the name of the man to whom it is awarded, with the dates of his service record.

FURTHER EMPHASIS ON THE IMPORTANCE OF RAILWAYS IN WAR.—The recent capture of Erzerum by the Russians, in their advance across Turkey in Asia, incidentally had the effect of emphasizing again the importance of railways in war time. While the Russians had a railway base at the terminus of the railway reaching the Caucasian frontier via Kurs, only 50 miles from the fallen fortress, the nearest enemy railway stations were Angora, which is about 500 miles away or equivalent to two months' march and Ourfa, on the Bagdad Railway, a distance of 380 miles, or 45 days' march. This meant that while the Russians could bring up men and munitions from railhead in the course of a few days' march, it would have taken Turco-German reinforcements in men and materials from seven to eight weeks, or even more.

General News Department

C. H. Searle, manager of mail traffic of the Rock Island Lines, addressed the Railroad Fellowship Club of Chicago at a luncheon at the Sherman House on April 6.

On the Chesapeake & Ohio, near Poplar Springs, Va., 10 miles east of Richmond, last Monday and Tuesday, tests were made of the automatic train stop of the American Train Control Company, of Baltimore, Md. This is the company whose device has been in use for two or three years past on the Maryland & Pennsylvania Railroad, near Baltimore.

The New York, New Haven & Hartford, with the view of increasing its revenue, has signed a contract with an advertising firm, George W. Roebling, Inc., for advertising in local passenger cars, at stations and along the company's right of way. This source of revenue has been availed of by the Rock Island, the Erie, the Illinois Central, one of the divisions of the New York Central, and the Long Island. This advertising is to be made as picturesque and artistic as possible.

The Chamber of Commerce of the United States has appointed a standing committee on the railroad situation, to consider the differences which are impending between the railroads and certain of their employees; and the names of the members are as follows: Harry A. Wheeler, Chicago, Ill., chairman; James Couzens, Detroit, Mich.; C. A. Johnson, Madison, Wis.; Bishop Thomas F. Gailor, Memphis, Tenn.; Oliver Wilson, Peoria, Ill.; E. T. Meredith, Des Moines, Ia.; William Fellowes Morgan, New York, N. Y.; Charles E. Faeth, Kansas City, Mo., and Charles F. Weed, Boston, Mass. Four appointments are yet to be made; one from the South, one from the Middle West, one from the Northwest, and one from New England.

The Kentucky legislature has recently passed "an act to protect railroad companies in the use and enjoyment of their rights of way by forbidding the condemnation thereof for other purposes." The act was approved by the governor on March 14. It provides that no part of the right of way of any railroad company or any interest or easement therein shall be taken by any condemnation proceedings or without the consent of the railroad company, for the use or occupancy of any telegraph, telephone, electric light, power or other wire company, provided that nothing in the act shall be construed as preventing any such wire company from obtaining the right to cross the right of way of railroad company in such manner as not to interfere with the ordinary use or traffic of the railroad.

Disastrous Fire at New Haven

In a fire in the yard of the New York, New Haven & Hartford at Spring street, New Haven, Conn., on the night of March 26, three large shops and several smaller buildings were completely destroyed; loss, including paints, signal material and other contents of store houses, about \$700,000. The main tracks were blocked for several hours.

Santa Fe Officers Address Employees on Wage Question

Officers of the Atchison, Topeka & Santa Fe addressed a meeting of approximately 4,000 of the company's employees at a meeting at Topeka, Kan., on Saturday, March 18, regarding the demands of the trainmen and engineers for an eight-hour basic day and time and one-half for overtime. C. W. Kouns, general manager, told the employees present that the engineers and trainmen do not really want a reduction in working time, but that their demands mean only greater pay. "The labor leaders have given the impression," he said, "that the fight is to maintain the principle of the eight-hour day. That is not so. The Santa Fe has an eight-hour day for employees who work by the month or by the hour, while the engineers and trainmen are employed under a special contract which permits them to charge either for the time put in or for the miles run, whichever brings the most money." R. L. Copeland, secretary-treasurer of the company, urged the other employees of the company to use their

influence in their communities to create a sentiment against radical action which would result in tying up railway traffic. Other meetings are to be held at the principal division points on the system.

Passengers Lifted by Tornado

Westbound passenger train No. 5 of the Toledo, St. Louis & Western, while traveling, near Marion, Ind., at about 50 miles an hour, on the night of March 21, was struck by a tornado, the first blast of which so rocked the cars and retarded the speed of the train that the engineman was frightened and applied the air brakes; and a few seconds later the three leading cars of the train were lifted entirely off the track and thrown over on their sides. The sleeping car at the rear of the train was derailed, but not ditched. Twenty passengers and two employees were injured.

Wage Demands of Train Service Employees Presented to Railroads

The wage demands of the train service employees, providing for a basic eight-hour day in freight and yard service and for time and one-half for overtime, as set forth in the four articles which were recently approved by a referendum vote of the employees, were to be presented to the railroads on Thursday of this week, according to instructions issued to the general chairmen of the Brotherhood of Locomotive Engineers, Order of Railway Conductors, Brotherhood of Locomotive Firemen and Enginemen and Brotherhood of Railroad Trainmen by the chief executives of those organizations. According to those instructions, the chairmen and secretaries of the general committees of the organizations interested were to present the proposition jointly to the general manager or other proper official of the road, with a notification that an answer would be expected in writing on or before April 29. The demand was to be presented in the form of an official notice of the desire on the part of the organizations to revise the present schedules and agreements, with a request that each road "join with other railway managements in the United States and enter into a collective movement for the purpose of handling the question through a joint committee representing all railroads concerned." One paragraph of the instructions to the general chairmen is as follows: "In the event that the officer expresses the desire to discuss the different articles inform him you have no authority to discuss or make any changes in any of the articles submitted. In the event that he concedes the request in its entirety without any form of modification, sign up at once."

Pennsylvania Safety-First Motion Picture Show

The New York division of the Pennsylvania Railroad held its first safety first rally for the year at Trenton, N. J., on Sunday, March 26. Employees of the road gathered in the State Street Theatre in that city, and, with their families, they numbered about 2,000. They went and returned in two special trains, running from Philadelphia and Jersey City, respectively.

Superintendent J. B. Fisher, in opening the afternoon's program, emphasized that results can be obtained only by doing safety first, and not merely by talking it. He showed that while there had been considerable decreases in the number of employees killed and injured, the number was still too great. The figures he gave were as follows: Employees killed: 1912, 30, or one in every 348; 1913, 36 or one in every 309; 1914, 21 or one in every 472, and in 1915, 19 or one in every 497. The men injured in the same period were: 1912, 1,415, or one in every 7; 1913, 1,299, or one in 9; 1914, 936, or one in every 11, and 1915, 851, or one in every 12. Mr. Fisher told the men that it was up to the employees themselves to get the figures down to no men killed and far fewer injured.

Following Mr. Fisher's remarks there were given on the screen a number of stereopticon views showing unsafe practices which often result in injury. The program was completed by two motion picture plays, one, "The Locked Door," showing the necessity for observing the laws laid down for the prevention of

fire and of panic resulting therefrom, and the other showing what the Brooklyn Rapid Transit Company is doing to prevent accidents in the streets of Brooklyn.

Revenues and Expenses for January, 1916

Net operating income of the railways of the United States for January increased \$111 per mile, or 64.5 per cent, as compared with January, 1915, according to the monthly bulletin of the Bureau of Railway Economics. Comparing January, 1916, with the average January of the preceding five years, the increase was 50.1 per cent.

Total operating revenues amounted to \$260,054,306, an increase over 1915 of \$45,911,426. Operating expenses were \$182,881,269, an increase of \$19,235,817. Net operating revenue amounted to \$77,173,037, an increase of \$26,675,609. Taxes amounted to \$12,216,566, an increase of \$964,430. This left \$64,915,286 net operating income, available for rentals, interest on bonds, appropriations for improvements and new construction, and dividends. Operating revenues per mile averaged \$1,133, an increase of 20.7 per cent; operating expenses averaged \$797, an increase of 11.1 per cent; net operating revenue per mile averaged \$336, an increase of 51.9 per cent, while net operating income per mile was \$283, an increase of 64.5 per cent. Taxes per mile increased 7.9 per cent. Railways operating 229,421 miles of line

and the operating income showed an increase of 39.6 per cent.

Operating income per mile increased 57.2 per cent in the East; increased 47.8 per cent in the South, and increased 23.4 per cent in the West.

January operating income per mile was 64.5 per cent greater in 1916 than in 1915, 60.5 per cent greater than in 1914, 18.9 per cent greater than in 1913, and 79.2 per cent greater than in 1912.

Two Hundred and Fifteen Millions

The New York State Public Service Commission, First district, calls attention to the fact that this month (the 19th) is the third anniversary of the signing of the "Dual system" rapid transit contracts for New York City. In the three years that have elapsed the commission has awarded construction and finish contracts for subway and elevated railways aggregating \$110,660,021. Before the contracts were signed it had awarded contracts in the amount of \$60,340,789, so that the total amount of contracts outstanding February 1, 1916, was \$171,000,811. The commission also in the last three years has awarded miscellaneous contracts for rails, ties and other materials aggregating \$4,661,714, so that the grand total of city contracts is \$175,662,525.32. The city, however, is not pledged for the entire amount, as there is included in it a certain percentage of the contribu-

REVENUES AND EXPENSES OF STEAM ROADS—JANUARY, 1916.

Compiled from monthly returns of the railways to the Interstate Commerce Commission and covering roads of Class I, i. e., roads with annual operating revenues above \$1,000,000.

Account.	United States				Eastern District				Southern District				Western District			
	Amount		Inc. over		Amount		Inc. over		Amount		Inc. over		Amount		Inc. over	
	January, 1916.	1916.	1915.	per cent.	January, 1916.	1916.	1915.	per cent.	January, 1916.	1916.	1915.	per cent.	January, 1916.	1916.	1915.	per cent.
Total operating revs.	\$260,054,306	1,133	\$939	20.7	\$122,205,490	2,069	1,591	30.0	\$40,700,115	\$959	\$796	20.5	\$97,148,701	\$759	\$684	11.0
Freight	185,499,565	809	645	25.2	87,819,949	1,487	1,081	37.5	29,971,486	706	572	23.5	67,708,130	529	468	13.1
Passenger	49,805,917	217	200	8.7	22,233,546	376	338	11.6	7,710,487	182	161	12.8	19,861,884	155	148	4.5
Mail	4,983,203	22	21	4.2	1,838,357	31	29	6.1	637,332	15	15	1.1	2,507,514	19	19	3.8
Express	6,278,366	27	25	10.1	2,867,551	49	45	7.8	1,014,634	24	21	15.1	2,396,181	19	17	11.2
All other	13,487,255	58	48	21.7	7,446,087	126	98	27.8	1,366,176	32	27	15.7	4,674,992	37	32	15.2
Total operating exps.	182,881,269	797	718	11.1	86,222,295	1,460	1,284	13.7	27,279,611	643	591	8.9	69,379,263	542	497	9.1
Maint. of way and struct.	28,658,168	125	105	19.2	12,226,102	207	182	13.9	4,587,430	108	98	10.2	11,844,636	92	71	29.7
Maint., equip.	46,057,725	201	177	13.4	22,153,374	375	329	14.0	7,663,688	181	150	20.8	16,240,663	127	116	9.7
Traffic	4,959,745	21	21	2.6	1,861,279	31	30	4.1	984,344	23	22	7.7	2,114,122	17	17	0.8†
Transportation	94,937,501	414	381	8.6	46,187,071	782	684	14.4	12,929,903	305	296	2.9	35,820,527	280	269	4.2
General	6,650,890	29	27	6.3	2,894,363	49	45	8.4	1,055,119	25	23	6.3	2,701,408	21	20	4.3
All other	1,617,240	7	7	10.2	900,106	16	14	9.4	59,127	1	2	32.5†	658,007	5	4	18.6
Net operating rev.	77,173,037	336	221	51.9	35,983,195	609	307	98.1	13,420,504	316	205	53.8	27,769,338	217	187	16.2
Taxes	12,216,566	53	49	7.9	5,056,656	86	80	7.0	1,758,862	41	37	11.4	5,401,048	42	39	7.9
Uncollectible revs.	41,185	*	*	*	12,185	*	*	*	12,127	*	*	*	16,873	*	*	*
Ry. operating income	64,915,286	283	172	64.5	30,914,354	523	227	130.3	11,649,515	275	168	63.2	22,351,417	175	148	18.4
Operating ratio:																
Per cent. 1916..		70.3				70.6				67.0				71.4		
Per cent. 1915..		76.4				80.7				74.2				72.7		
Average mileage represented: 1916..		229,421				59,057				42,416				127,948		
1915..		227,988				58,931				42,037				127,021		

* Less than one dollar. † Decrease.

are covered by this summary, or about 90 per cent of the steam railway mileage in the United States.

Operating revenues of the Eastern railways per mile show an increase of 30.0 per cent, as compared with January, 1915; operating expenses increased 13.7 per cent; net operating revenue increased 98.1 per cent, and taxes increased 7.0 per cent. Operating income increased 130.3 per cent. Comparison of January, 1916, with the average January for five years past shows an increase of 94.3 per cent.

Operating revenues of the Southern railways per mile increased 20.5 per cent, operating expenses increased 8.9 per cent, net operating revenue increased 53.8 per cent, and taxes increased 11.4 per cent. Operating income increased 63.2 per cent. Comparing January, 1916, with the average for five years past, the increase was 41.9 per cent.

Operating revenues of the Western railways per mile show an increase of 11.0 per cent, operating expenses increased 9.1 per cent, net operating revenue increased 16.2 per cent, taxes increased 7.9 per cent, and operating income increased 18.4 per cent. Compared with the average for five years past, operating income for January, 1916, increased 17.7 per cent.

The seven months of the current fiscal year, compared with the corresponding period of the preceding year, show changes per mile of line as follows: Operating revenues increased 12.7 per cent, operating expenses increased 3.3 per cent, net operating revenue increased 34.6 per cent, taxes increased 6.1 per cent,

tions made by the two companies towards the cost of construction, namely, \$58,000,000 by the Interborough Rapid Transit Company, and about \$14,000,000 by the New York Municipal Railway Corporation. Under the arrangements for the third-track and extension of the elevated railroads the operating companies have awarded construction and equipment contracts aggregating fully \$40,000,000, so that the total amount of construction contracts already awarded on the dual system aggregates about \$215,000,000. The construction work is divided into 89 contract sections. Of these 75 have been placed under contract, and plans for the remaining 14 are nearly completed. Bids for several of these will be invited within the next six weeks, and before the end of 1916 it is expected that all contracts will have been awarded.

Wage Demands of Train Employees

[From an address by A. W. Thompson, vice-president, Baltimore & Ohio, before the Pittsburgh Chamber of Commerce, on March 14, 1916.]

Seemingly, there is decided unrest in the ranks of labor generally, skilled and unskilled. The "eight-hour day" movement on railroads is participated in by four of the strongest brotherhoods of railway employees, who are now taking a vote on the question of enforcing the shorter hours and higher rates of pay. The patrons of the railroads naturally expect them to pay such wages and maintain or adopt such working conditions as will guarantee the manning of trains dependably and competently, and that the

men shall have adequate rest to enable them to be wide-awake and discerning when on duty. If the railroads are now paying such wages and providing proper working conditions, if fair investigation of the subject develops the fact that these men receive as fair compensation as can be justified to all concerned, and if the working conditions are equitable, then the roads ought not to be required to pay higher wages.

Railway wages are now largely determined by arbitration awards. The income of a railroad is limited in its unit augmentation by law, that is, it depends upon the judgment of the Interstate Commerce Commission. But there is no provision fixing for the railroad the amount of earnings it shall pay out in wages. It seems unfair that some of the railway employees may be paid wages and given working conditions not justified, especially since the men involved in this eight-hour day movement constitute but 18 per cent of the total number of men employed by railroads, and the wages they now receive are equal to 28 per cent of all of the wages paid to all the employees of every class. Due to repeated increases in wages, advances in the cost of materials, etc., the surplus on many railroads has been wholly wiped out, while that of all others has suffered alarming diminution, so that little or nothing is left for betterments. With further reduction of surplus because of another increase in wages there would be still less money available for improvements that are sorely needed. There would be only one solution of it; the public would have to make it up by paying higher freight and passenger rates.

Disastrous Collision at Amherst, Ohio

In a rear collision of eastbound passenger trains on the New York Central at Amherst, Ohio, 32 miles west of Cleveland, on the morning of March 29, about 3:15 o'clock, and in the crash immediately following, when two derailed cars were struck by a westbound passenger train, 26 or more passengers were killed and a large number injured. The leading train, eastbound, was express No. 86, first section, a train destined for Pittsburgh via Cleveland, the Erie, and the Pittsburgh & Lake Erie; and it was run into at the rear by the second section of the same train, the leading train having been stopped at an unusual point. The westbound train was No. 25, the 20th Century Limited. There was a dense fog at the time of the collision. The engine and five passenger cars in the westbound train were thrown off the track, but no very serious injuries to persons are reported as occurring in that train.

The second section of No. 86 consisted of express cars and sleeping cars from Detroit and Toledo for Cleveland and Pittsburgh. The first was made up of baggage car, sleeping cars, club car and coach.

The engineman of the second section appears to have disregarded a distant and a home automatic block signal.

First 86 was stopped at an interlocking tower, and the reports indicate that this stop was unnecessary, being due to the negligence of the tower man in not promptly clearing the signal. The train had been again put in motion, and, according to a statement of D. C. Moon, general manager, at 3 p. m. on the 29th, was moving at from five to ten miles an hour when struck. The statement says that all of the passengers killed and all of the seriously injured were in the rear car of the first section, which was a modern steel coach; that this and the car ahead, which had a steel underframe, were thrown over on the westbound track just as the westbound train was approaching; that of the 26 persons known at that hour to have been killed, 24 were passengers and two were employees; and that tests made immediately after the collision showed the signals to be all working properly.

Train 86 is scheduled from Chicago to Cleveland at about 43½ miles an hour, including stops.

The Federal Valuation

Thomas W. Hulme, general secretary of the presidents' conference committee on the federal valuation of railroads, has issued a statement regarding the recent work of this committee. Sub-committees have been organized to determine the best methods of inventorying signals and interlocking plants and the application thereto of unit prices, Charles Hansel, consulting engineer, New York, being chairman. A similar committee has been

organized to secure information relative to the inventory of equipment with D. F. Crawford, general superintendent of motive power, Pennsylvania Lines, chairman.

The government will probably complete the inventories of the following roads in April: The Atlanta, Birmingham & Atlantic; the Elgin, Joliet & Eastern; the Kansas City Southern; the New Orleans, Texas & Mexico; the Norfolk Southern; the San Pedro, Los Angeles & Salt Lake, and the Texas Midland.

It is probable that hearings on these inventories will be held before the commission or the valuation committee in May.

The director of valuation has stated that much greater progress can be made by the federal bridge, telegraph, telephone and other parties if the carriers will provide motor cars, where operating conditions will permit, for which the government is willing to pay a reasonable compensation. Cars capable of carrying four or five men have generally been furnished by the roads at a charge of \$5 a day. The roads furnish all supplies and an operator and where necessary to run under train orders, a competent pilot. For the use of smaller gasoline inspection cars such as are employed by the Telegraph department a rental of \$1 a day has been charged by some roads.

This statement also contains a list of the more important of those roads which have been advised that their property will be inventoried as of June 30, 1916 or 1917, as follows:

Eastern District.

1916	1917
B. & A.	A. C. L.
B. & L. E.	B. R. & P.
C. P. R. (Me. & Vt.)	G. T. (New Eng.)
C. C. & O.	L. V.
C. N. E.	Pennsylvania
C. of N. J.	Rutland
C. & O.	
Cumberland Valley	
D. & H.	
L. I.	
N. & W.	
N. C.	
P. & R.	
P. & L. E.	
R. F. & P.	
Southern	
Virginian	

Southern District.

1916
Florida East Coast
N. C. & St. L.
P. C. C. & St. L.
P. Ft. W. & C.
Southern
Vandalia

Central District.

1916	1917
Green Bay & W.	C. & N. W.
M. & St. L.	G. T. (Mich. & Ind.)
N. O. G. N.	M. C.
T. & P.	N. O. & N. E.
T. St. L. & W.	V. S. & P.
Wisconsin Central	

Western District.

1916	1917
A. T. & S. F.	Wabash
C. G. W.	
M. St. P. & S. S. M.	
G. C. & S. F.	
M. K. & T.	
Okl. Cen.	

Pacific District.

1916
C. P.
Deschutes
O. S. L.
O. T.
O. W. & N.
S. P.
S. P. S.

Engineers' Society of Western Pennsylvania

At the mechanical section bi-monthly meeting of the Engineers' Society of Western Pennsylvania, to be held in the society rooms in the Oliver building, Pittsburgh, at 8 p. m., April 4, a paper will be presented by George A. Orrok, mechanical engineer of the New York Edison Company, on "The Purchase of Large Machinery."

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

- AIR BRAKE ASSOCIATION.**—E. M. Nellis, 53 State St., Boston, Mass. Next convention, May 2-5, 1916, Atlanta, Ga.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.**—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—Calvin W. Rice, 29 W. 39th St., New York.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.**—Willis H. Failing, Terminal Station, Central of New Jersey, Jersey City, N. J. Next meeting, May 17, 1916, Hotel Traymore, Atlantic City, N. J.
- CANADIAN RAILWAY CLUB.**—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.**—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.**—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.
- CENTRAL RAILWAY CLUB.**—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.**—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.
- FREIGHT CLAIM ASSOCIATION.**—Warren P. Taylor, Traffic Manager, R. F. & P., Richmond, Va. Annual session, May 17, 1916, Washington, D. C.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.**—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.**—J. G. Crawford, 547 W. Jackson Blvd., Chicago. Annual meeting, May 15-18, Hotel Sherman, Chicago.
- MASTER BOILER MAKERS' ASSOCIATION.**—Harry D. Vought, 95 Liberty St., New York. Annual convention, May 23-26, 1916, Hollenden Hotel, Cleveland, Ohio.
- NEW ENGLAND RAILROAD CLUB.**—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.**—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.**—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.**—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.**—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.
- RAILWAY CLUB OF PITTSBURGH.**—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.
- RAILWAY STOREKEEPERS' ASSOCIATION.**—J. P. Murphy, N. Y. C. R. R., Box C, Collingwood, Ohio. Annual meeting, May 15 to 17, 1916, Hotel Statler, Detroit, Mich.
- RICHMOND RAILROAD CLUB.**—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ST. LOUIS RAILWAY CLUB.**—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SALT LAKE TRANSPORTATION CLUB.**—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.**—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga. Next meeting, April, 1916.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.**—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.
- TOLEDO TRANSPORTATION CLUB.**—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.
- TRAFFIC CLUB OF CHICAGO.**—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.**—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.
- TRAFFIC CLUB OF ST. LOUIS.**—A. F. Versen, Mercantile Library Bldg., St. Louis, Mo. Annual meeting in November. Noonday meetings, October to May.
- UTAH SOCIETY OF ENGINEERS.**—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.
- WESTERN CANADA RAILWAY CLUB.**—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.**—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Grand Pacific Hotel, Chicago.
- WESTERN SOCIETY OF ENGINEERS.**—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

The Port Huron & Duluth Steamship Company, operating on the Great Lakes, last week declared an embargo on all eastbound package freight shipments, and also on flour, copper and grain products.

Eleven railroads concerned in the readjustment of freight rates from Oregon and Washington points to Astoria, Oregon, in relation to the rates to Seattle and Tacoma, ordered recently in a decision of the Interstate Commerce Commission, have petitioned the commission for a rehearing.

Traffic Club of Chicago

The annual meeting and election of the Traffic Club of Chicago was held at the Hotel La Salle, Chicago, on Tuesday, evening, March 28. By arrangement with the American Telephone & Telegraph Company, through the courtesy of the Chicago Telephone Company, 600 telephones were installed and connected with the Transportation Club of San Francisco, and F. L. Bateman, the president-elect, delivered his inaugural address to the club members over a distance of over 2,000 miles by telephone. The following officers were elected for the ensuing year: President, F. L. Bateman, president, Transcontinental Freight Company; first-vice-president, Carl Howe, manager, New York Central fast freight lines; second vice-president, Murray N. Billings, assistant traffic manager, Illinois Steel Company; third vice-president, J. F. Govan, general agent, passenger department, Chicago & Eastern Illinois; secretary, W. H. Wharton, commercial agent, Nashville, Chattanooga & St. Louis; treasurer, Charles B. Hopper, general freight agent, Goodrich Transit Company.

Lake Traffic Through "Soo" Canals

The annual statistical report of lake commerce passing through the canals at Sault Ste. Marie, Mich., and Ontario during the season 1915 has just been issued, and shows that the total freight passing through the canals for the season was 71,290,304 short tons, an increase of 29 per cent, or nearly 16,000,000 tons over the season of 1914. The net registered tonnage was 56,399,147, an increase of 34 per cent, or 14,000,000 tons. The items of freight showing an increase are wheat, copper, iron ore, lumber and general merchandise. The total valuation placed on the freight carried was \$882,000,000, and the total amount paid for freight carried was \$41,984,031. This includes the rates for lake transportation and the cost of loading and unloading. The total number of registered vessels using the canals was 806, and there were also 482 passages by unregistered class carrying freight. The total number of passengers carried was 50,336, a decrease of 9,465. The total number of passages through both canals numbered 21,233, an increase of 13 per cent. The season of navigation continued for a period of eight months and eight days, during which time the average monthly freight traffic was 8,623,827 short tons. Ninety-four per cent of the freight was carried by American vessels and 6 per cent by Canadian vessels. The traffic through the American canal was 89 per cent of the total freight, and 85 per cent of the net registered tonnage. Compared with the season of 1914, there was an increase of 35,777,526 tons of freight, or 129 per cent; 23,228,466 tons register, or 94 per cent; and a decrease of 4,414 passengers, or 15 per cent.

Eastern Freight Accumulation Conference

This is the name that has been adopted for the committee of six railroad presidents and one member of the Interstate Commerce Commission, which has been organized to sit in New York to consider, in joint action in behalf of all the eastern railroads and also of the interests of the public, all questions relating to freight congestion, embargoes, etc. Conferences have been held with representatives of shippers and a more formal conference between the two parties—the railroads and the public—is to be held within a few days.

The railroads' sub-committee is receiving detailed reports from the large force of inspectors which it has placed in the field.

James C. Lincoln, traffic manager of the Merchants' Association of New York, speaking for a large committee of merchants, which held a meeting March 24, has asked the railways to have all embargo notices given wide publicity through the newspapers. He recommends also that shipments should not be accepted by the railroads for delivery by lighters in New York harbor until the exact destination is shown.

The Merchants' Association Committee, with a view to more effectively dealing with the present congestion, has sent to all members of the association a list of questions designed to elicit facts as to how the embargoes are affecting business; with what degree of care and fairness the railroads are imposing embargoes; just how serious are delays in given cases; what are the detail causes of delays in delivery, and how can these be eliminated; what is the effect of the reduction in free time for storage of export freight, and questions on many other points.

Prominent shippers in New York City have expressed approval of the methods now being adopted by the railroads in meeting the problems connected with freight congestion. The suggestion has been made that the freight houses on the piers be kept open until midnight, if necessary, to aid in clearing the warehouses.

Some of the merchants of Boston believe that their difficulties in connection with congestion are fully as bad as any felt at New York City.

To provide for the necessities of spring planting, shipments of seeds, fertilizers and fertilizing materials, also agricultural implements, consigned to local points in New England and not for export, will be accepted and forwarded promptly. All existing embargoes are modified to this extent. There is a serious shortage of anthracite coal at Meriden, Waterbury, Hartford and other Connecticut points, and the local schools will have to be closed if shipments are not soon received. A bulletin has been issued to all lines to forward any cars of anthracite coal now held for such destinations as early as possible, the New Haven road having agreed to take the cars at proper junction points and deliver them.

The freight accumulation conference has sent out telegrams to get coal cars belonging to the eastern railways sent home as rapidly as possible, this because of the heavy ore traffic, expected in the near future, on the opening of navigation on the Great Lakes.

James C. Lincoln, of the Merchants' Association, recognizing the force of the railroads' statements concerning the trouble caused at New York by dilatory consignees failing to take away their freight, has issued a circular endorsing the railroads' statement of facts, and asking every receiver of freight to do his part in relieving congestion.

President Wilson, in a letter written this week to the Democratic leader in the lower House of Congress, Mr. Kitchin, urging prompt action on certain legislative items, says, in regard to transportation:

"In considering the program of the session there are two matters which seem to me to stand out more prominently than the rest. . . . It would seem as though the whole movement of our trade and industry waited on satisfactory solutions of our problems of transportation. That is the reason why it seems to me that the shipping bill should be pressed to an early passage, and I write today to express the hope that the Senate joint resolution No. 60 for the investigation of the conditions of transportation by railway may find an early opening in the business of the House for its consideration. I did not put this on the list of legislation which I suggested because it did not in my mind fall under the head of legislation at all, but only of incidental action for the purpose of laying the groundwork for future legislation at another session of the Congress.

"The railways of the country are becoming more and more the key to its successful industry, and it seems to me of capital importance that we should lay a new groundwork of actual fact for the necessary future regulation. I know that we all want to be absolutely fair to the railroads, and it seems to me that the promised investigation is the first step toward the procurement of that desire. . . ."

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The New York Central, the Delaware & Hudson, the Central of New Jersey, the Erie, the Lehigh Valley and the New York, Ontario & Western have filed a petition with the commission asking it to reopen the anthracite rate case insofar as it relates to rates on anthracite coal from the Lehigh and Wyoming regions of Pennsylvania to Albany, Troy and Mechanicville, N. Y.

Commutation Fares at Steubenville, Ohio

City of Steubenville, Ohio, v. Tri-State Railway & Electric Company et al. Opinion by Commissioner Clark:

A commutation passenger fare of \$8 for 100 rides between Steubenville, Ohio, and Follansbee, W. Va., on the Steubenville, Wellsburg & Weirton Railway is found unreasonable, and a maximum fare of \$3.70 for 52 rides is prescribed for the future. (38 I. C. C., 281.)

St. Paul—Chicago Lumber Rates Justified

Opinion by Commissioner Daniels:

The commission finds that a proposed increased rate of 12 cents on lumber and lumber products from St. Paul, Minneapolis, Duluth, Minnesota Transfer and Stillwater, Minn., and Ashland, Wis., and points taking the same rates, to Chicago and Chicago rate points has been justified. (38 I. C. C., 370.)

Rates from La Crosse, Ind.

La Crosse Shippers' Association et al. v. Chicago & North Western et al. Opinion by Commissioner Daniels:

The commission finds that the class rates from La Crosse, Wis., to various points in Minnesota on and south of the Chicago, Milwaukee & St. Paul from St. Paul to Big Stone City and Wheaton, Minn., are not unreasonable. It is also held that the record shows no sufficient reason for the establishment of proportional rates from La Crosse to St. Paul or Minnesota Transfer, Minn. Complaint was also made that the rates were discriminatory, but as the record as to that point is not sufficiently complete the matter is left open for further consideration. (38 I. C. C., 453.)

Rates on Coal to Culpeper and Manassas, Va.

Bennett & Son et al. v. Chesapeake & Ohio et al. Opinion by Commissioner Harlan:

Rates on bituminous coal in carloads to Culpeper and Manassas, Va., of \$2 from the New River district, and \$2.10 from the Kanawha district of West Virginia are not found unreasonable or discriminatory. It is further held that the rates to Culpeper and Manassas, and to other intermediate points taking the same rates, may exceed the rates on like traffic to Alexandria and Washington. The commission believes, however, that the present adjustment has the effect of discriminating against such intermediate points, and in view thereof it finds that the rates to Culpeper and Manassas, and to other intermediate points taking the same rates, should not exceed \$1.85 per net ton from the New River district and \$1.95 per net ton from the Kanawha district. To that extent only is relief prayed for in the fourth section applications of defendants granted. (38 I. C. C., 310.)

Minimum Charges on Bulky Articles

In the matter of minimum charges on articles too long or too bulky to be loaded through the side door of cars. Opinion by Commissioner McChord:

In the original report in this case (33 I. C. C., 378) the commission prescribed the following rule to be applied uniformly in the three classifications:

Unless otherwise provided, a shipment containing articles the dimensions of which do not permit loading through the center side doorway, 6 ft. wide by 7 ft. 6 in. high, without the use of end door or window in a closed car

not more than 36 ft. in length by 8 ft. 6 in. wide and 8 ft. high, shall be charged at actual weight and authorized rating, subject to a minimum charge of 4,000 lb. at the first-class rate for the entire shipment.

Following the application of this rule by the carriers, the commission received numerous complaints from certain shippers setting forth instances in which the rule worked a hardship when applied to their particular kinds of freight. These complaints were chiefly from the shippers of long iron and steel articles, shippers of long timbers, flagpoles and telegraph poles, and silo staves.

The matter has been reopened for further consideration and the carriers are now authorized to publish the following exception to the above rule:

Unless a lower rate is otherwise provided, a shipment which contains an article exceeding 22 ft. in length and not exceeding 12 in. in diameter or other dimension shall be charged at actual weight and authorized rating, subject to a minimum charge of 1,000 lb. at the first-class rate for the entire shipment.—(38 I. C. C., 257.)

Flue Lining Minimum Weight

Opinion by the commission:

The commission finds that the carriers have not justified a proposed increase from 35,000 to 50,000 lb. in the minimum carload weight for flue lining shipped from central freight association territory to interstate destinations. (38 I. C. C., 328.)

Classification of Cylinders

Opinion by the commission:

The commission holds that the carriers have not justified a proposal to charge from sixth to fifth class the classification on "cylinders, wrought iron or steel, welded or seamless, for compressed air or gases or liquids under pressure: coppered or nicked, empty, returned, loose or in packages." The decision was based largely on *Prest-O-Lite Co. v. B. & A.* 36 I. C. C., 545. (38 I. C. C., 198.)

STATE COMMISSIONS

The Railroad Commission of Tennessee has issued an order requiring the Illinois Central to reduce passenger rates within that state, inside of 30 days, to the basis of 2½ cents a mile.

The New Hampshire Public Service Commission has issued a report, based on investigations made last July, dealing with charges concerning misuse of money, in politics or in improper publicity, by the Boston & Maine and the Concord & Montreal Railroads during the past few years when the Grand Trunk was seeking to establish a new line through New Hampshire to Boston. The report consists largely of amplified statements, concerning expenditures, which were made public previous to the hearings held last year. The report recommends legislation requiring newspapers, in printing articles for which a railroad or public service corporation had paid money to indicate the name of the corporation and its agent; a law making the employer of legislative agents and attorneys responsible for their registration; regular reports to the commission of expenditures for political agents, publicity, etc., and the adoption and publication by railroad companies of a rule forbidding their agents and employees to appear as legislative agents except when registered. The report says that the expenditures of the Grand Trunk do not appear to have been illegal.

PERSONNEL OF COMMISSIONS

James B. Walker, heretofore assistant secretary, has been appointed secretary of the New York State Public Service Commission, First district, succeeding T. H. Whitney, who has been made a commissioner.

COURT NEWS

The supreme court of Missouri has issued an order directing the secretary of state of Missouri to issue a license to the Wabash Railroad to operate in Missouri as a foreign corporation. The reorganized road was incorporated in Indiana and the secretary of state refused to issue the license on the ground that the statute of 1913 required all railroads in the state to incorporate under the laws of the state. The supreme court ruled that this

law applies only to railroads not heretofore licensed to transact business in the state, and does not apply to corporations taking over the property of roads already operated.

Construction of Contract for Railroad Ties

In an action for damages for breach of a contract under which the plaintiff contracted to manufacture and deliver railroad ties, providing that if the ties were not satisfactory to the buyer on inspection the contract should be void, the Kentucky Court of Appeals holds that the buyer was the sole arbiter of his own satisfaction, so long as he acted in good faith.—*Humble v. Wyatt* (Ky.) 182 S. W. 610.

Fencing Statute

The Supreme Court of the State of Washington holds that as a company was not required by the fencing statute to fence a station and side track outside an incorporated city or town, a cattle guard at each end of such side track would have served no purpose, and its absence was not the proximate cause of an injury to animals that went on the tracks at that point and were killed by a train.—*Benn v. C. M. & St. Paul* (Wash.), 154 Pac., 1,082.

Fencing Parallel Railroads

The Indiana Appellate Court holds that where the exterior lines of parallel and adjacent rights of way of two railroad companies were properly fenced, the maintenance of a fence between the rights of way was not required by the Indiana fencing statute, requiring every railroad to maintain fences on both sides. It could not serve any useful purpose, but would be an additional and unnecessary obstruction to the crossing. A private crossing was provided with gates, one of which being left open, the hogs of the owner of an adjacent farm strayed over the right of way of one railroad, and thence to the tracks of the other, where they were killed. That railroad was held not liable.—*Pickett v. Toledo, St. L. & W.* (Ind.), 111 N. E., 434.

Look and Listen Rule

The Kansas Supreme Court holds that, although in that state the driver of an automobile is not under all circumstances as a matter of law required to stop before crossing a railroad track, he must look and listen before attempting to cross at a grade crossing, and his failure to do so will prevent a recovery for injuries although there is an electric warning bell at the crossing and the bell is not ringing. Enginemen on a passenger train who shut off the steam and apply the brakes a quarter of a mile before reaching a street crossing in a small city, and who suppose that the crossing bell is ringing, are not guilty of wantonness, although they fail to ring the engine bell or sound the whistle for the crossing, and although they go through the city at the rate of 45 miles an hour.—*Jacobs v. Atchison* (Kan.), 154 Pac. 1023.

Accident Release by Express Messenger

In an action by an express company's messenger against a railroad for injuries received in a train wreck, the Tennessee Supreme Court holds that the plaintiff was bound by his contract of employment with the express company, whereby he assumed the risk of injury, and released his claims against carriers for liability for personal injury, and ratified the company's contracts with carriers, agreeing to save the company harmless as to any claims for personal injury. The employment he received was consideration for the contract. In the absence of any fraud practiced on him by the express company in procuring the contract, he was bound by it whether he did or did not read it when he signed it. He did not stand to the railroad in the relation of a passenger, so as to make the railroad liable. Such a contract is not void as against public policy.—*McKay v. L. & N.* (Tenn.), 182 S. W., 874.

Stipulations in Bills of Lading as to Time for Transportation and for Lodging Claims

In an action for deterioration in condition of an interstate shipment of watermelons consigned from North Carolina to Jersey City it appeared that the claim was not made within the

10 days stipulated in the bill of lading. The New Jersey Court of Errors and Appeals held that the fact that the railroad, when the claim was presented out of time, rejected it on other grounds, did not constitute a waiver of the stipulation.

It was also held to be erroneous to refuse to charge the jury "that the defendant was not bound to carry or transport the watermelons by any particular train, nor within any particular time, nor in time for any particular market, nor otherwise than with reasonable despatch with reference to other business of the defendant as its general business permitted," since this request embodied the exact language of the bill of lading constituting the special contract of the parties.—*Olivet Bros. v. Pennsylvania* (N. J.), 96 Atl., 582.

Rest, Water and Feeding Act—Excuses—Hot Box and Leaking Engine

In an action against the Boston & Maine for statutory penalties under the rest, water and feeding act it appeared that, when four carloads of sheep were delivered to the defendant, there remained over 16 hours in which to make delivery; and that time would ordinarily have sufficed. When the shipment left Greenfield, 100 miles from its destination, Boston, at which former place there were facilities for unloading one carload, there remained 5 hours and 30 minutes, and there was no unloading expected the train would make the run within that time. A hot box developed on the engine tender, and another engine was procured, which developed leaks, and the failure of the two engines to work made delivery impossible within the time limit. The first engine had recently been overhauled, and there was no special reason for anticipating a hot box, and the second engine had worked well on its last previous trip, the defect which caused the delay first developing on the run in question. The Massachusetts Federal District Court held that the delay was caused by accidental or unavoidable causes, which could not be anticipated or avoided by the exercise of due diligence and foresight, and rendered judgment for the defendant.—*U. S. v. B. & M.*, 228 Fed., 915.

Safe Place to Work—Assumption of Risk

An experienced machinist was directed to put a firedoor frame weighing 150 lb. on a locomotive standing over a pit, and for that purpose he made a temporary platform to stand on by laying boards across the framework of the cab. After boring certain holes and making certain alterations he attempted to place the frame in position to see how it would fit, and was pushing it up against the face of the boiler with his hands and stomach, when his foot slipped, or a board slipped, and he lost his balance and fell into the pit. In an action for his injuries the Circuit Court of Appeals, Eighth Circuit, held that if the frame was defective, it was the plaintiff's own fault, and the railroad owed him no duty to make the place safe. If there was any danger in attempting to do the work without a block and fall, the plaintiff must have known the danger, and by doing without these he assumed the risk. There was no reason for the railroad to anticipate injury to anyone, and therefore there was no negligence.—*Cartwright v. Atchison T. & S. F., C. C. A.*, 228 Fed., 872.

"Passenger"—Due Care by Persons on Tracks

At Field's Corner station the New Haven road had passively acquiesced in the practice of passengers entering the train, not from the station, but from the tracks on the other side of a bridge, which were reached by the use of a retaining wall. In an action for the death of a person standing between the track and the retaining wall, after walking along the retaining wall, there being an open bridge and tracks between him and the station, the Massachusetts Supreme Court holds that this acquiescence by the railroad did not make the deceased a "passenger."

If he was not a passenger, in order to recover for his death it must appear that he was in the exercise of due care. When reaching the top of the embankment he stood in a position of danger near a track where a train was expected, without looking and apparently without listening, reading a paper and making no effort to save himself. It was held that such conduct was not

that of a man of ordinary prudence, and no recovery could be had.—*Youngerman v. N. Y. N. H. & H.* (Mass.), 111 N. E., 607.

Delay—Strike—Relative Perishableness of Fruit

The last successive carrier of an interstate shipment of watermelons sought to relieve itself from liability for delay because the bill of lading contained a condition that the carrier, except in case of negligence, should not be liable for damage to property resulting from delay in transportation if such delay is caused by a strike. The evidence tended to show: (1) That the strike was over before the shipment was received by the carrier; and (2) that the delay was caused by the use by the carrier of the watermelon tracks at the destination point, during and following the strike, in the delivery of peaches usually delivered elsewhere, to the exclusion of watermelons, which were placed on storage tracks at an intermediate point. The New Jersey Court of Errors and Appeals held that the question whether the delay was caused by the negligence of the carrier or by the strike was for the jury, and a motion for a direction of verdict for the defendant was properly refused. The jury found for the plaintiff.

The railroad contended that the judge erred in refusing to charge "that it was the duty of the defendant to move the most perishable fruit first under the circumstances, and the holding back of less perishable fruit, viz., the watermelons, until the peaches had been delivered was not negligence." It was held that the request was properly refused, because there was no evidence that the peaches were more perishable than the watermelons, and it would have been improper for the trial judge to have assumed to determine the question as a matter of law.—*Carr v. Pennsylvania* (N. J.), 96 Atl., 588.

Application of Fencing Statutes to Cases of Accidents to Employees

Action was brought by a bridgeman for injuries received from being thrown from a motor car, derailed while in charge of a fellow employee by running over sheep. The question of negligence of the operator was held to be for the jury, which found for the plaintiff. The Arkansas Supreme Court held that through the statute requiring the St. Louis & North Arkansas to fence its right of way so as to prevent animals from getting thereon, and making it liable for double the value of stock killed if negligently not so fenced, is designed primarily for the protection of live stock and the protection of the owners, non-compliance therewith might be considered on the question of negligence in the present case.—*Sands v. Linch* (Ark.), 182 S. W. 561.

In another recent decision the fencing statute of Montana was held not applicable to the case of an injury to a trainman resulting from running over a cow. The Montana Supreme Court held that the failure of a railroad to fence its tracks may render it liable for the death of a conductor from the derailment of a car by a cow on the track, not in virtue of the fencing statute of the state, which was enacted for the benefit of stock-owners, but in virtue of the road's common law obligation to exercise ordinary care to furnish its employees with a reasonably safe place in which to work; although it admits the authorities on this proposition are by no means harmonious. In the present case it appeared that the track was not fenced, that cattle were permitted to run at large, that there was some public domain in the vicinity of the accident, and an unobstructed access to the right of way and track; and that cattle frequently came upon the track, and encounters between them and moving trains were not unusual, all of which the railroad knew prior to the accident. In these circumstances it was held that the question whether the railroad's failure to fence the track constituted actionable negligence was for the jury.—*Alexander v. Great Northern* (Mont.), 154 Pac. 914.

Carmack Amendment—Shipper Must Sue Original Carrier

The Pacific & Idaho Northern received an interstate shipment of lambs, giving a bill of lading to the shipper, purporting to limit its liability to its own line. At Weiser the Oregon Short Line took the shipment and gave a new bill of lading. That of the Pacific & Idaho Northern was surrendered. The shipper sued the Oregon Short Line for injuries alleged to be due to improper handling. The Illinois Supreme Court holds that under the Carmack amendment, declaring that the carrier re-

ceiving goods for an interstate shipment, and issuing a through bill of lading, shall be liable for all injuries which may occur, the original carrier, which receives the goods and issues such bill of lading, is liable, and, though a connecting carrier issues a bill of lading, the shipper must proceed against the original carrier. Any other doctrine would substitute diversity for unity, and instead of making liability depend upon the law, would base it upon the independent, separate acts of connecting carriers. The purpose of the amendment, on the other hand, has been declared to be to combine unity of responsibility with continuity of transportation. Judgment for the plaintiff was therefore reversed.—*Looney v. O. S. L. (Ill.)*, 111 N. E., 509.

Telegraph and Telephone Lines on Rights of Way

The Mississippi Supreme Court holds that where a telephone company acquired a right from a railroad company to maintain its lines over the railroad's right of way, it could not thereafter grant to a telegraph company the right to string a wire on its poles, since the construction of the telegraph line would constitute an additional servitude on the railroad's right of way, the purposes of the two corporations being essentially different, and the situation not being that of the lease of a right to use a pole already constructed. In such a case, the telegraph company was a mere trespasser, for it entered on the premises in good faith under color of right, and the railroad could remove the property of the telegraph company from its premises, using such force and means as was reasonably necessary to preserve its own property. The railroad, however, the court considered, went beyond its lawful rights in the premises, and unnecessarily destroyed the telegraph wire by cutting it in numerous places in such a way that it was practically rendered valueless, and this was held to create a right to compensatory damages.—*Postal T. & T. Co. v. Gulf & Ship Island (Miss.)*, 70 So. 833.

Assumption of Risk

Action was brought under the federal employers' liability act by a station agent at Dassel, Minnesota, for personal injuries. It was a part of his duty to attend the pump house some distance from the station once or twice a day, and keep the water tank filled for locomotives. The water was pumped by a gasoline engine, and pump and engine were in a small room. In starting the pump the plaintiff's arm was caught in the clutch of the engine and cut off. As the Minnesota Supreme Court put it, he claimed that "he lost his balance, either through a slip upon the greasy floor or a jerk by his coat being drawn into the fly-wheel or shaft, and in striking out to catch himself his hand and part of his arm came between the crank of the shaft and the top of the hood which partially but inadequately guarded it." The state court deemed the evidence to be "very clear" that it was practicable to interpose safeguards "so as to fully protect from danger those who had to pass by." The plaintiff alleged negligence in failing to provide suitable protection; the railroad denied negligence and pleaded assumption of risk. The trial court held these to be questions for the jury, and there was a verdict for the plaintiff for \$12,000. The plaintiff agreed to a reduction of this to \$9,500 and the judgment was affirmed by the supreme court of the state, 130 Minn. 405. The railroad appealed to the Supreme Court of the United States. It was conceded that the federal act applied to the case. The only question was whether the trial court should not have directed a verdict for the defendant instead of submitting the evidence to the jury. As error was not palpable the state court's judgment was affirmed.—*Great Northern v. O. B. Knapp*. Decided March 20, 1916.

Contractor Handling Coal Not an Employee

The Supreme Court of the United States on March 20 decided that a contractor for the handling of coal at a point on a railroad's line under written contract is not an employee of the company but an independent contractor, and recovery for his death cannot be had under the Federal employers' liability act.

The facts were practically undisputed. The Rock Island runs through the limits of Enid, Oklahoma. Within the city are six parallel tracks which run nearly from the north to the south, bearing as they proceed a little to the west. At the south end near their termination are located coal chutes, into the pockets of which coal is shoveled for the use of all engines. The de-

ceased had two contracts with the railroad, one to handle all coal required at Enid, and to unload wood and sand; the other to cooper cars for grain in transit. The deceased had also a contract with an elevator company to unload coal. He was killed while walking on a track by a train which, at the time, was exceeding the ordinance speed limit. A jury returned a verdict for \$7,583, and judgment for this was affirmed by the State Supreme Court.

The United States Supreme Court did not consider the question of negligence, the determining consideration being the relation in which Turner, the deceased, stood to the company whether he was an employee of it or an independent contractor. The court held he was the latter; that the control the railroad had over him was only a prudent precaution, necessary in view of the purpose of his contract, to provide coal daily for the operation of the road. While it was control in a sense, it was not a detailed control of the actions of the deceased or those of his employees. The contract provided explicitly that the deceased "shall be deemed and held as the original contractor and the railroad company reserves and holds no control over him in the doing of such work other than as to the results to be accomplished." Judgment for the plaintiff was therefore reversed.—*Rock Island v. Bond*. Decided March 20, 1916.

Negligence of Brakeman Bars Recovery for His Death

The Supreme Court of the United States on March 20 reversed the judgment of the Supreme Court of Minnesota, which had affirmed an award of \$650 for the death of a Great Northern freight brakeman in an action under the employers' liability act. The determining facts of the case are as follows:

The deceased was a rear brakeman or flagman on an east-bound freight. After having passed a curve in the road the train broke in two and stopped. It was run into within from three to five minutes after by a following passenger train. The night was dark and misty, and the rear end of the freight could not be seen more than about 200 ft. No negligence was attributed to the engineman of the passenger train. The deceased and the conductor of the freight train were in the caboose and both were killed. What caused the pulling out of the drawbar (which caused the stop) was not shown, nor was there proof that it was defective or that the company was negligent in the care or use of it.

The forward brakeman of the freight testified that the train stopped immediately on the pulling out of the drawbar, that he descended from the train and hastened back to the caboose for a chain, and that he saw the headlight of the passenger train as it came around the curve. He further testified that it was the flagman's duty to have gone back to protect the rear end of his train, and that the engineer of the freight train, at the time the train broke in two, signaled the rear brakeman to go back. It appeared also that the freight train was losing time from slipping and that the deceased knew the time the passenger train was due to leave the station in the rear, and he should have dropped off the train or should have put fuses on the track to warn the passenger train. Rules 99 and 100 were put in evidence.

The State Supreme Court applied the rule of *res ipsa loquitur* (the occurrence speaks for itself), and held that this rule justified the submission of the question of the railroad's negligence to the jury. The United States Supreme Court holds that, even if this rule is ever applicable to cases of injuries to employees, which is disputable, it was not applicable to the present case. The pulling out of the drawbar produced a condition which demanded an instant performance of duty by the deceased, a duty not only to himself but to others, which duty he disregarded, bringing death to himself and the conductor. The tragedy of the collision might have been appalling, extending to the passengers in the colliding train. To excuse his neglect of duty in any way "would cast unmeasurable liability on the railroads, and, what is of greater concern, remove security from the lives of those who travel on them; and therefore all who are concerned with their operation, however high or low in function, should have a full and an anxious sense of responsibility." There was nothing to extenuate the deceased's negligence; there was nothing to confuse his judgment or cause hesitation. His duty was as clear as its performance was easy. He knew the danger of the situation and that it was imminent; to avert it he had only to descend from the train, run back a short distance, and give the signals that the rules directed.—*Great Northern v. Wiles*. Decided March 20, 1916.

Railway Officers

Executive, Financial, Legal and Accounting

G. W. Danner, auditor of disbursements of the Texas & Pacific at Dallas, Texas, has been appointed assistant auditor, and H. R. Eppler succeeds Mr. Danner.

William M. Corbett, who has been elected president of the Kansas City Terminal, was born at Great Valley, N. Y., on January 6, 1858. He entered railway service in 1874 with the Erie, as a section laborer. He was subsequently promoted to telegraph operator and station agent, and in 1878 was made train despatcher at Buffalo, N. Y. From 1886 to 1887 he was trainmaster of the same railroad, and from 1887 to 1888 was in charge of the transportation department in the general manager's office at New York. From 1888 to 1890 he was trainmaster of the Delaware division, at the end of which period he became superintendent of transportation and superintendent of the Evansville & Terre Haute, Evansville & Indianapolis, Evansville & Richmond and Evansville Belt railroads. On January 1, 1901, he became superintendent of the Middle division of the Chicago & Alton at Springfield, Ill., and from August 1, 1902, up to the time of his recent election as president of the Kansas City Terminal, was superintendent of the Western division of the Chicago & Alton, with office at Kansas City, Mo.

Frederick H. Osborn, whose election as vice-president in charge of traffic of the Detroit, Toledo & Ironton, with headquarters at Detroit, Mich., has already been announced in these columns was born in 1889, at New York City. He graduated from Princeton University in 1906, and first entered railway service with the El Paso & Southwestern in January, 1911. In July, 1912, he was elected treasurer of the American Automatic Switch Company of New York. He was connected with the Nevins Church Press in the capacity of treasurer from January, 1913, to April, 1914, when he entered the service of the Detroit, Toledo & Ironton as secretary and treasurer, in charge of industrial development. His election as vice-president in charge of traffic, with headquarters at Detroit, will be effective on April 1.



F. H. Osborn

Operating

Frank J. Hagner, trainmaster of the Philadelphia & Reading at East Penn. Junction, Pa., has been appointed superintendent of the Shamokin division, with office at Tamaqua, Pa., vice R. Boone Abbott, promoted.

M. F. Leamy, trainmaster of the Delaware & Hudson at Albany, N. Y., has been appointed acting superintendent of the Saratoga and Champlain divisions, vice J. A. McGrew, granted leave of absence on account of sickness.

C. C. F. Bent, general superintendent of the Baltimore & Ohio, in charge of the New York division, and vice-president of the Staten Island Rapid Transit Railway, at New York, has been appointed general agent of the Baltimore & Ohio in charge of the Philadelphia district, with headquarters at Philadelphia, Pa., effective April 1.

J. V. Kennedy, superintendent of the Cleveland-Indianapolis divisions, of the Cleveland, Cincinnati, Chicago & St. Louis, at

Bellefontaine, Ohio, has been appointed general superintendent of the Cincinnati Northern, with headquarters at Van Wert, Ohio, succeeding M. A. Neville, resigned, to engage in private business. Thomas J. Hayes, superintendent of the Peoria & Eastern, at Indianapolis, Ind., succeeds Mr. Kennedy, and P. T. White, superintendent of the Michigan division of the C. C. C. & St. L. at Wabash, Ind., succeeds Mr. Hayes.

A. G. Smart, superintendent of the Aurora division of the Chicago, Burlington & Quincy at Aurora, Ill., has been appointed superintendent of the Beardstown division, with headquarters at Beardstown, Ill., vice F. Cone, transferred. L. B. Lyman, superintendent of the Wymore division at Wymore, Neb., has been appointed superintendent of the Aurora division, with office at Aurora, vice Mr. Smart transferred, effective April 1.

Traffic

T. C. Tipton has been appointed general agent of the Fort Smith & Western, with office at Atlanta, Ga., effective on April 1.

Lynn E. Stone has been appointed commercial agent of the Continental Line and the Central States Despatch, with office at Indianapolis, Ind.

J. W. Paton, traveling freight agent of the Hocking Valley at Columbus, Ohio, has been appointed commercial agent, with headquarters at Columbus.

H. E. Duval has been appointed division freight agent of the Chicago, Rock Island & Pacific, in charge of the Illinois division, with headquarters at Chicago, Ill.

George M. Henry, general passenger agent of the Detroit, Toledo & Ironton at Detroit, Mich., has been appointed also industrial agent, with headquarters at Detroit.

E. B. Finegan has been appointed chief of tariff bureau of the Chicago Milwaukee & St. Paul, with headquarters at Chicago, Ill., succeeding C. A. Butler, promoted, effective on March 21.

J. E. Hite, superintendent of the Tennessee State farm, has been appointed assistant agricultural agent of the Nashville, Chattanooga & St. Louis. In addition to the demonstration farms now operated by the road at Tullahoma, Tenn., Murfreesboro, Dickson, Decherd, Sewanee and Martin, the company has just opened farms at Paris, Tenn., and Albertville, Ala.

Engineering and Rolling Stock

Guy Pinner has been appointed bridge engineer of the Seaboard Air Lines, effective April 1, W. O. Scheuerman, assistant bridge engineer, having resigned.

J. E. Kissell has been appointed acting engineer maintenance of way of the Peoria & Eastern, vice A. M. Turner, assigned to other duties, effective on March 23.

Elmer A. Borell, general air brake inspector of the Philadelphia & Reading, has been appointed engineer motive power, with office at Reading, Pa., and the position of general air brake inspector has been abolished.

A. M. Turner, acting engineer maintenance of way of the Peoria & Eastern, has been appointed district engineer of the Cleveland, Cincinnati, Chicago & St. Louis in charge of track elevation, with headquarters at Columbus, Ohio, effective March 23. E. H. McGovern has been appointed resident engineer, with office at the same city, effective on April 1.

W. W. K. Sparrow, whose appointment as valuation engineer of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been announced, was born in Ireland on December 30, 1879. He was educated at Rossall, England, and passed the examination prescribed by the Institute of Civil Engineers, London, in 1896. In the same year he entered the service of the Belfast & Northern Counties Railway (Ireland), remaining in the service of that company until 1898, when he went to South Africa to engage in railroad location, construction and maintenance work in the service of the Cape Government Railways and the Chartered Company of Rhodesia. From February, 1909, to July, 1912, he was in the employ of Waddell & Harrington, consulting engineers at Kansas City, Mo., as detailer, checker and designer. From the latter date until September, 1913, he was associated with H. Von Unwerth, consulting engineer, Kansas

City, Mo. From September, 1913, to April 1, 1916, he has been assistant chief engineer of the Missouri State Public Service Commission.

B. M. Cheney, who has been appointed general inspector permanent way and structures of the Chicago, Burlington & Quincy, was born at Eldora, Iowa, on September 27, 1879. He graduated from the high school at Traer, Ia., in 1897, after which he taught in country schools for two years. In April, 1900, he entered the service of the Burlington, Cedar Rapids & Northern as a rodman on location. In 1901 and 1902 he attended Iowa State college at Ames, Ia., and Armour Institute at Chicago. He left Armour Institute in May, 1902, to become resident engineer of the Des Moines, Iowa Falls & Northern. From March to December, 1903, he was instrumentman on construction of the Illinois Central; from May, 1904, to February, 1906, he was assistant engineer and assistant chief engineer on construction of the Inter-Urban Railway at Des Moines, Ia. He entered the service of the Burlington on February 6, 1906, as assistant engineer on construction and maintenance on the Beardstown division between Concord and Herrin, Ill. In 1910 he was transferred to the La Crosse division, in charge of second track construction. In October, 1914, he was appointed assistant to the general inspector of permanent way and structures. From January, 1915, to March 1, 1916, he was acting general inspector. As general inspector he will continue to have headquarters at Chicago, Ill.



B. M. Cheney

Purchasing

R. J. Stackhouse has been appointed superintendent materials and supplies of the Philadelphia & Reading, with office at Reading, Pa., succeeding J. K. Witman, deceased.

OBITUARY

Dr. Granville B. Conn, formerly a member of the New Hampshire State Railroad Commission, died March 24 at Wayne, Pa., at the age of 84. Dr. Conn had been surgeon of the Boston & Main Railroad.

Rufus M. Pile, formerly assistant general passenger agent of the Pennsylvania Railroad from June, 1903, until July, 1914, when he retired under the pension rules of the company after a service of 41 years with that road, died on March 28 at his home in Philadelphia, Pa.

Roberts Lawrie Stewart, mechanical superintendent of the Second district of the Chicago, Rock Island & Pacific, with headquarters at El Reno, Okla., died suddenly at Kansas City, Mo., on Friday morning, March 24. He was born March 22, 1866, at Tyrone, Pa., and was educated in the public schools and at Cornell University. He went with the Denver & Rio Grande in 1885 as machinist apprentice. After completing his course he was appointed roundhouse foreman, leaving that road in 1905. He later served the Atchison, Topeka & Santa Fe, the Kansas City Southern and the Chicago, Rock Island & Pacific as general foreman and master mechanic. On June 1, 1914, he was promoted to mechanical superintendent of the Third district of the Chicago, Rock Island & Pacific with headquarters at El Reno, Okla., and on January 1, 1916, his jurisdiction was extended to cover a portion of the old Second district when it was consolidated with the First and Third districts. At the time of his death Mr. Stewart was in the performance of his duties, having come to Kansas City on Thursday morning. He leaves a widow and one son, R. C. Stewart.

Equipment and Supplies

LOCOMOTIVES

CAROLINA, CLINCHFIELD & OHIO, see Chicago Great Western.

THE BINGHAM & GARFIELD is in the market for 3 freight and 6 or 8 switching locomotives.

THE DELAWARE, LACKAWANNA & WESTERN will build 10 switching locomotives in its own shops.

THE ST. LOUIS & SAN FRANCISCO will issue inquiries soon for a number of Pacific type locomotives.

THE NORFOLK & WESTERN is expected to enter the market soon for 30 Mallet type locomotives.

THE CHICAGO GREAT WESTERN has sold 10 Mallet type locomotives to the Carolina, Clinchfield & Ohio.

THE ATCHISON, TOPEKA & SANTA FE is reported as contemplating the purchase of 75 or 100 locomotives.

THE ONEIDA & WESTERN has ordered one Consolidation locomotive from the Baldwin Locomotive Works.

THE MISSOURI PACIFIC has issued inquiries for 20 Mikado and 5 to 10 heavy six-wheel switching locomotives. A later report which, however, had not been confirmed up to the time of going to press, states that an order for these locomotives has been placed with the American Locomotive Company.

THE DONORA SOUTHERN has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works.

THE ASHLAND, ODANAH & MORENGO has ordered one Mogul type locomotive from the Baldwin Locomotive Works.

THE MINNEAPOLIS & ST. LOUIS has ordered 6 six-wheel switching locomotives from the American Locomotive Company.

THE ATLANTIC COAST LINE has ordered 10 Pacific type and 2 six-wheel switching locomotives from the Baldwin Locomotive Works.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 10 six-wheel switching locomotives from the American Locomotive Company.

THE RUSSIAN GOVERNMENT is reported to have placed an order for 70 locomotives with the American Locomotive Company. This item has not been confirmed.

THE STANDARD OIL COMPANY OF INDIANA has ordered one six-wheel switching locomotive from the American Locomotive Company. This locomotive will have 21 by 26-in. cylinders, 50-in. driving wheels and a total weight in working order of 154,000 lb.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE, reported in the *Railway Age Gazette* of March 10 as having issued inquiries for 5 Santa Fe and 4 Pacific type locomotives, has ordered 3 Santa Fe and 3 Pacific type locomotives from the American Locomotive Company.

THE PENNSYLVANIA LINES WEST, reported in the *Railway Age Gazette* of March 17 as securing prices on 50 Mikado locomotives, have ordered 25 Mikado locomotives from the Lima Locomotive Corporation, and 25 of the same type from the Baldwin Locomotive Works.

THE CALUMET & ARIZONA MINING COMPANY, Warren, Ariz., has ordered 4 superheater six-wheel switching locomotives from the American Locomotive Company. These locomotives will have 19 by 26-in. cylinders, 50-in. driving wheels and a total weight in working order of 133,000 lb.

FREIGHT CARS

MORRIS & Co. is inquiring for 7 tank cars.

THE WABASH is in the market for 1,000 box car bodies.

THE MISSOURI PACIFIC is inquiring for 1,000 general service cars.

THE DIXIE TANNERY, Bristol, Tenn., desires to rent several tank cars.

THE CUMBERLAND & PENNSYLVANIA is in the market for 50 freight cars.

THE PITTSBURGH, SHAWMUT & NORTHERN is inquiring for 500 hopper and 250 gondola cars.

THE WARNER SUGAR REFINING COMPANY, New York, is in the market for 50 to 125 freight cars.

THE UNION TANK LINE has ordered 750 tank cars from the American Car & Foundry Company.

THE YOUNGSTOWN SHEET & TUBE COMPANY, Youngstown, O., has issued inquiries for 150 50-ton hopper cars.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for 100 second-hand Roger ballast cars.

THE NEW YORK CENTRAL has ordered 1,000 coal cars from the Standard Steel Car Company for the Cleveland, Cincinnati, Chicago & St. Louis.

THE PHILADELPHIA & READING has ordered 500 steel hopper cars from the Standard Steel Car Company and 500 from the Pressed Steel Car Company.

THE ILLINOIS CENTRAL has withdrawn its recent inquiries for freight cars, with the exception of 300 stock cars, orders for which will be probably placed within the next few days.

THE ERIE, reported in the *Railway Age Gazette* of March 17 as having issued inquiries for 1,000 50-ton side dump cars, has ordered these cars from the Standard Steel Car Company, and is reported to have ordered 500 other cars from another company.

THE CARNEGIE STEEL COMPANY's inquiry for freight cars was incompletely given in last week's issue as 60 gondola, 10 hopper and 10 flat cars. These amounts should have been given as 60 gondola, 10 hopper and 18 flat cars. The company will also buy 25 mine cars.

THE CHICAGO, BURLINGTON & QUINCY has ordered 500 automobile cars from the American Car & Foundry Company, and is revising its specifications for 1,000 box cars, inquiries for which were reported last week as withdrawn, to provide for steel center sills only instead of full steel underframes.

THE SOUTHERN, reported in the *Railway Age Gazette* of March 17 as having ordered 1,000 box cars from the Pressed Steel Car Company and 500 from the Mount Vernon Car Manufacturing Company, ordered gondola cars and not box cars as reported. The 1,000 ventilated box cars on which the company is now getting prices are for the Mobile & Ohio.

PASSENGER CARS

THE NORTH LOUISIANA & GULF, Hodge, La., is in the market for 1 combination coach.

H. E. HUNTINGTON, of New York, has ordered a private car from the Pullman Company.

THE LONG ISLAND has ordered 4 passenger train cars from the American Car & Foundry Company.

SIR JOHN EATON, of Toronto, Ont., has ordered one all-steel private car from the Pullman Company.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for 2 or 3 second-hand 3-ft. gage passenger coaches.

THE ILLINOIS CENTRAL has ordered one postal and 9 mail and baggage cars from the American Car & Foundry Company, and 18 baggage, 45 coaches, 10 dining, 4 buffet and 7 chair cars from the Pullman Company.

IRON AND STEEL

THE CHICAGO & ALTON has ordered 8,000 tons of rails for 1917 delivery.

THE ERIE has ordered 15,000 tons of rails from the Carnegie Steel Company.

THE MINNEAPOLIS & ST. LOUIS has ordered 7,500 tons of rails for 1917 delivery.

THE BALTIMORE & OHIO has ordered 1,400 tons of bridge steel from the King Bridge Company.

THE MISSOURI PACIFIC has been authorized by the Federal Court to purchase 32,000 tons of rails.

THE PENNSYLVANIA RAILROAD is reported to be preparing to enter the market for its next year's rail requirements.

THE ATLANTIC COAST LINE has ordered 16,000 tons of rails from the Tennessee Coal, Iron & Railroad Company.

THE NORFOLK & WESTERN has ordered 2,200 tons of structural steel for new car shops from the Virginia Bridge & Iron Company.

THE MISSOURI, KANSAS & TEXAS has ordered 17,500 tons of rails from the Illinois Steel Company, and 15,000 tons from the Maryland Steel Company.

THE CHICAGO & EASTERN ILLINOIS has ordered 600 tons of steel for seven 91-ft. girder spans from the Milwaukee Bridge Company.

THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA has ordered 960 tons of steel for an office building in St. Paul from the Minneapolis Steel & Machinery Company.

THE CHICAGO, BURLINGTON & QUINCY has ordered 385 tons of girder spans from the American Bridge Company, and 494 tons of girder spans from another company.

THE ATCHISON, TOPEKA & SANTA FE has tentatively asked the Illinois Steel Company and the Colorado Fuel & Iron Company to reserve space for rails for 1917 requirements.

THE BALTIMORE & OHIO has ordered 50,000 tons of rails from the Carnegie Steel Company, 15,000 tons from the Maryland Steel Company, and 10,000 tons from another company.

MISCELLANEOUS

THE CHICAGO GREAT WESTERN has awarded a contract to the Roberts & Schaefer Company, Chicago, for a counter-balanced bucket locomotive coaling plant at Hayfield, Minn. The plant will be a duplicate of the one recently erected at Red Wing, Minn.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for the following second-hand equipment: One 15 to 20-ton locomotive crane with magnet; one 50-ton capacity railroad crane or derrick car; one charging machine, and one 30-ton ladle crane with 60-ft. span.

RAILWAY EXTENSION IN TASMANIA.—Recently an offer was made by two of the leading business men of Hobart to construct a railway from Hobart to the west coast of Tasmania. There has been a demand for this railway for a number of years, but as the state of Tasmania had not been in a financial position to construct it, some years ago it offered certain grants to a syndicate as a bonus for the work. The syndicate did not take advantage of this offer, and now the business men mentioned have offered to construct the road if the government will give them the same terms that were offered to the syndicate. The railway would develop a large and rich section of Tasmania. It would be about 140 miles long, and would cost between \$4,000,000 and \$5,000,000.

PROPOSED EXTENSION OF GOLD COAST RAILWAYS.—The Gold Coast Government Railways now comprise two lines from the seacoast into the interior, one starting at the port of Secondee and running through the gold-mining district to Coomassie, a distance of 168 miles, with a branch of 20 miles to Prestea, and the other leaving the port of Accra and traversing the cocoa regions to Koforidua, a distance of 52 miles. These roads run almost parallel to one another in a northerly direction, and it is now proposed to connect them by a line running from Coomassie across the interior to connect with the Accra Railway. The survey work for the new line, which will be approximately 140 miles in length, has been actively progressing, a good route has been staked out, and estimates on the cost of construction have been submitted to the government.

Supply Trade News

The Electric Storage Battery Company, Philadelphia, Pa., will on April 1 move its St. Louis office from the Fullerton building to larger quarters at 1508 Federal Reserve Bank building.

The Sherritt & Stoer Company, Inc., 603 Finance building, Philadelphia, Pa., has been appointed exclusive sales agents in the Philadelphia district for the Beaudry Champion and Peerless power hammers made by Beaudry & Co., Inc., Boston, Mass.

John C. Neale has been appointed general manager of sales of the Cambria Steel Company, succeeding C. B. McElhany, resigned. Mr. McElhany and H. W. McAteer, until recently comptroller of the Cambria Steel Company, have secured control of the American Steel Export Company, and will move its office to New York.

The Cochrane tie spacer, described in the daily issue of the *Railway Age Gazette* of March 23, together with the Borden tie spacer, a somewhat similar device largely used in Canada, have both been acquired by the Q & C Company, which has the exclusive rights to manufacture and sell these devices, to be known hereafter as the B-C tie spacer.

Walter H. Bentley, who has been appointed assistant to the president of Mudge & Co., Chicago, Ill., was born in Chester, England, in 1888. He came to America in 1892, and was educated in the public schools at Oak Park, Ill. In 1903, he entered the service of the Chicago & North Western as an employee of the store-keeping department. From 1903 to 1908, he was in the maintenance of way department of the same railroad. In 1909, he entered the employ of the Duluth & Iron Range as a locomotive fireman, returning to the North Western in December of the same year. From that time until May, 1912, he worked in various capacities in the maintenance of way department, the pension department, the superintendent's office and the purchasing department. He became a member of the Chicago sales force of the Baldwin Locomotive Works and the Standard Steel Works upon leaving the North Western. In April, 1914, he became western representative of the Curtin Supply Company, and on March 1, 1916, was appointed assistant to the president of Mudge & Company, at Chicago.

L. E. Jordon, president and general manager of the Vulcan Process Company, Inc., Minneapolis, Minn., has disposed of his interest in the company and has been succeeded in office by Clifford N. Lockwood, who will have the position of treasurer and general manager. The Vulcan Process Company, Inc., deals in oxy-acetylene apparatus and supplies.

The Quigley Furnace & Foundry Company, Springfield, Mass., having recently added to its business a brass rolling mill department for the production of flat brass, the stockholders of the company, at the annual meeting on January 26, decided to adopt a new and more comprehensive name, the Metals Production Equipment Company. No change has been made in general policy or management. The furnace, foundry and powdered coal departments will be continued as heretofore.

Lightner Henderson, chief engineer of Purdy & Henderson, civil engineers, died at Chicago, Ill., on March 17. He was

born in 1866 at Lancaster Gap, Pa. Following his graduation from Lehigh University in 1889, he worked as a structural-steel draftsman and designer until 1891, when he entered the employ of C. T. Purdy, consulting engineer, at Chicago. Two years later he formed a partnership with Mr. Purdy, and as a member of the firm of Purdy & Henderson helped design some of America's foremost structures, including the Pennsylvania Railroad station at New York City and the Wabash-Pittsburgh terminal at Pittsburgh.

J. H. Wheelock, traffic manager of the Fuller & Johnson Manufacturing Company, Madison, Wis., died on March 20. Mr. Wheelock was stricken with heart disease, and died in his office soon after he had begun his day's work. He was born at Milwaukee, Wis., on August 26, 1846, and in his younger days engaged in railroading in the South. He became traffic manager of the Fuller & Johnson Manufacturing Company in 1905, and continued to hold that position up to the time of his death.

Holden & White is the name of a new firm formed by R. R. Holden, formerly with the Wesco Supply Company of St. Louis, Mo., and recently a manufacturer's agent in Chicago, and W. McK. White, former sales manager of the Esterline Company of Indianapolis, Ind. The new company will represent a number of manufacturers of railway materials and equipment, and has arranged for affiliated representation in 15 cities in the United States and Canada. The company has opened offices in the Fisher building, 343 South Dearborn street, Chicago, Ill.

Ernest McCullough, for many years a consulting engineer specializing largely on reinforced concrete design and construction, has been appointed chief engineer, fireproof construction bureau of the Portland Cement Association, Chicago. Mr. McCullough received his engineering training in California, where he graduated in 1887 as a civil engineer, and his first work was drafting on a piece of reinforced concrete construction. He has engaged in engineering work for many years, and was at one time connected in an editorial capacity with Engineering & Contracting and the *Railway Age Gazette*. Mr. McCullough is also the author of several books, among them being "Practical Surveying," "Engineering as a Vocation," "Engineering Work in Towns and Cities" and "Practical Structural Design."

Lima Locomotive Corporation

The plan of readjustment of the Lima Locomotive Corporation recently announced provides for the formation of a new company with an authorized capital stock of \$3,200,000 7 per cent preferred stock, of which \$2,200,000 is to be issued at once, and \$7,550,000 common stock, of which \$4,350,000 is to be issued at this time. The preferred stock will be entitled, in preference to the common stock, to dividends at the rate of 7 per cent per annum and no more, which shall be cumulative after April 1, 1917. The preferred will be convertible into common stock, share for share, at the option of the holder, and will be redeemable after three years in whole, or in part at the option of the new company at \$107.50 per share and accrued cumulative dividends. Both classes of stock are to have equal voting right.

The preferred stock outstanding is to be offered at \$90 per share to depositors of common stock of the present company, and \$1,000,000 is to be reserved for future requirements of the new company. Of the authorized common stock \$2,000,000 is to be offered to the depositors of the outstanding preferred stock of the present company, no allowance being made for accrued cumulative dividends in default, share for share, without payments; \$1,000,000 is to be offered to depositors of outstanding common stock of the present company, one share for four without payment; \$1,100,000 to purchasers of \$2,200,000 new preferred stock, one share with each two shares purchased; \$250,000 to officers or employees of the new company, as the committee in its discretion may determine, and \$3,200,000 is to be reserved against the conversion privilege of the preferred stock.

FALLEN IN THE WAR.—The South-Eastern & Chatham Railway of England has had large memorial tablets erected in some of its principal stations recording the names of over 100 members of the staff who have fallen in the war.



W. H. Bentley

Railway Construction

BOSTON SUBWAYS.—Bids are wanted until April 11 by B. Leighton Beal, secretary of the Boston Transit Commission, Boston, Mass., for building Section J of the Dorchester tunnel. This section is in and near Dorchester avenue and Boston street, from about 80 ft. north of Dexter street to about 30 ft. south of Ralston street, South Boston. The section is to be about 1,000 ft. long, and will be mainly of reinforced concrete and structural steel construction. The work includes the Andrew Square station. (March 17, p. 527.)

BRITISH COLUMBIA ROADS.—According to press reports from Vancouver, B. C., a proposition will be submitted to the British Columbia government asking for a guarantee of \$35,000 a mile for a new railway. The projected route is from Prince George, B. C., north into the Peace River country to Hudson's Hope on Peace river, about 150 miles. C. F. Law represents the promoters in British Columbia and Alberta.

CHATTAHOOCHEE VALLEY.—A contract has been given to the Nichols Contracting Company, Atlanta, Ga., for building an extension from Jester, Ala., south about 12 miles to a point about 14 miles west of Columbus, Ga. The company now operates a line from Standing Rock, Ala., south to Jester 34 miles. (March 17, p. 527.)

CHICAGO, BURLINGTON & QUINCY.—This company has let to the J. J. McCaughey Company, Chicago, a contract for team-work on grading for second track between Forbes, Mo., and Curzon's five miles. The work will total 100,000 to 125,000 cu. yd.

CONNECTICUT ROADS.—Plans are being made to start work this year on an electric line to be built from Torrington, Conn., southwest via Litchfield and Bantam, to Morris, thence southeast to Watertown, and then south to Waterbury, about 35 miles. The A. J. Patton Company are the engineers, Waterbury.

CUMBERLAND & MANCHESTER.—The sub-contract which was let recently to T. J. Anderson for grading work on a section of 8 miles, has since been given to Dempster & M'Farlane, Knoxville, Tenn. The plans call for building from Barbourville, Ky., Knox county, north to Manchester, 24 miles. The general contract was let in January to the Read Construction Company, Hazleton, Pa. F. M. Heidrick, president. (March 17, p. 527.)

GULF, SABINE & RED RIVER.—A contract has been given to Cook, Richardson & Arrington, Crockett, Tex., to build an extension from Farwell, La., north to Merryville, 11.32 miles. The maximum grade will be 1 per cent and the maximum curvature 3 deg. The work will involve handling 12,000 cu. yd. to the mile. Timber bridges will be built on the extension, calling for 165,401 f. b. m. The line is controlled by the Lutch & Moore Lumber Company, Orange, Tex. Bids are wanted up to March 31, for the construction of an additional extension of about 16 miles. (See Lutch & Moore Lumber Company, December 31, p. 1262.)

INDIANAPOLIS & FRANKFORT.—Incorporated with principal office at Richmond, Ind., it is said, to build a railroad from a connection with the Vandalia Railroad at Ben Davis, Ind., north to Frankfort, where a connection is to be made with the same road, about 45 miles. The plans also call for building a line from Ben Davis, south to the Vandalia at Mooresville, about 10 miles.

KENTUCKY ROADS.—According to press reports, subscriptions are being secured for the construction of a railroad from a connection with the Chesapeake & Ohio to Hindman, Ky., about 20 miles. H. C. Francis, Hindman, is said to be interested.

LEHIGH VALLEY.—The Lehigh Valley Harbor Terminal Railway was incorporated recently in New Jersey with \$100,000 capital as a subsidiary of the Lehigh Valley Railroad, and will build about 1½ miles of railroad from Chapel avenue, Jersey City, N. J., on the Lehigh Valley, to a point at the exterior line for piers as established by the New Jersey Riparian Commission. Options on some 400 acres of waterfront and underwater land are said to have been obtained, which indicates that extensive terminal developments will be carried out at that point.

LEHIGH VALLEY HARBOR TERMINAL RAILWAY.—See Lehigh Valley.

MCCOMB & MAGNOLIA LIGHT & RAILWAY.—This company will build with its own forces a line from Summit, Miss., south via McComb and Fernwood to Magnolia, about 10 miles. The work includes building a 900-ft. trestle. S. M. Jones, Laurel, Miss., may be addressed.

MEXICAN NORTHERN PACIFIC.—Under this name a company has been incorporated in Delaware with \$600,000 capital to build railroads. The incorporators include Joseph F. Curtin, S. B. Howard, S. A. Anderson, 34 Nassau street, New York.

MOLTZ LUMBER COMPANY'S ROAD.—Preliminary surveys have been made for building a seven-mile logging railroad for the Moltz Lumber Company, of Lake Toxaway, N. C. The projected route is from the Southern Railway at Lake Toxaway northwest to timberland. R. S. Brown, engineer, Lake Toxaway, N. C.

NORTHWESTERN ELECTRIC SERVICE COMPANY OF PENNSYLVANIA.—Incorporated in Pennsylvania, with headquarters at Erie; to take over the rights and interests of the Northwestern Pennsylvania Railway operating an electric line from Erie, Pa., south via Cambridge Springs, and Venango to Meadville, thence west to Linesville. A branch line will be built from Venango to Siverlings Corners, 3½ miles. F. F. Curtze, president, and J. Briggs, chief engineer, Erie.

NORTHWESTERN PENNSYLVANIA.—See Northwestern Electric Service Company of Pennsylvania.

PEOPLE'S INTERURBAN COMPANY, INCORPORATED.—Organized in Mississippi, it is said, with \$10,000 capital to make surveys and plans, for an interurban line to be built for the Southern Finance & Construction Company of Memphis, Tenn. The line is projected to connect Greenwood, Miss., with Schlater, Itta Bena and Black Hawk, about 40 miles. J. H. Parson, Nashville, it is understood will be president, and E. M. Purcell, Greenwood, will be treasurer.

PITTSBURGH & SHAWMUT.—A contract was let recently to J. H. Corbett, Kittanning, Pa., for work on a section of 8 miles of the extension between Cadogan and Freeport. The maximum grade will be 0.2 per cent and the maximum curvature 9 degs. The work involves handling about 20,000 cu. yd. of earth and loose rock to the mile. There will be two small stations on this section. All the bridge work has been finished.

TEXAS ROADS.—A railroad is projected from a connection with the Gulf, Colorado & Santa Fe at Lometa, Tex., south to a connection with the San Antonio, Fredericksburg & Northern, at Fredericksburg, about 75 miles. It is planned to ultimately extend the line from Lometa northeast about 40 miles to Gatesville. S. W. Fisher, Austin, Tex., is the promoter.

WEST VIRGINIA ROADS.—Plans are being made, it is said, to construct a short line from a connection with the Monongahela Valley Traction Company's line at Janelew, W. Va., southeast to Berlin. It is understood that the line will eventually be extended to Lorentz and Buckhannon. G. Jackson and Dr. Collins, Janelew, are said to be interested.

WYNOOCHE TIMBER COMPANY.—This company has awarded a contract to the Grays Harbor Construction Company for grading a new logging road from Grays Harbor, Wash., up the valley of the Wynooche river to timber holdings of the company. The maximum grade will not exceed 1.6 per cent, and the maximum curvature will be 10 deg. The construction of the line will involve the erection of a 180-ft. bridge across the Wynooche river. Frank H. Lamb, president, Hoquiam, Wash.

STRUCTURES

ARDMORE, OKLA.—The Atchison, Topeka & Santa Fe is preparing plans for a one-story brick freight house, 32 ft. by 234 ft., 54 ft. of which will be used for office purposes and 180 ft. for storage purposes. The building will rest on a concrete foundation, and will have a 60-ft. covered platform. The Santa Fe is also drawing up plans for a one-story, stucco and brick passenger depot at this point, 28 ft. by 181 ft. This building will also rest on a concrete foundation.

BIRMINGHAM, ALA.—Negotiations are now pending between the city officers of Birmingham and the railways interested for

the construction of a viaduct across Twenty-first street. Under a recent act of the legislature, the city has the right to require the railroads to construct viaducts at certain points.

BUFFALO, N. Y.—The Buffalo Creek Railroad has given a contract to the Great Lakes Dredge & Dock Company, Buffalo, for work in connection with a new dock to be built on the ship canal at Buffalo. The proposed structure will be of reinforced concrete construction on pile foundation; it will be about 30 ft. wide and 800 ft. long.

CAROLINA JUNCTION, VA.—The Norfolk Southern will carry out improvements at Carolina Junction, which is located at the crossing of this company's lines and the Virginian Railway, about 1½ miles south of the Norfolk city limits. At this point the company has 70 acres of ground, about one-third of which has been taken for freight-yard tracks; the balance has been set apart for shop purposes. The company has given a contract to the Arnold Company, Chicago, for an 8-pit rectangular engine house, adjoining which will be a boiler and machine shop. The entire building for these three purposes is to be 160 ft. by 180 ft. It is to be of semi-fireproof construction. A planing mill, 75 ft. by 150 ft., and a storehouse 75 ft. by 150 ft., will be built, also the necessary cinder pits, water stations, coaling arrangements, etc. The expenditure authorized at the present time amounts to about \$175,000.

FREEPORT, TEX.—The construction of a bridge across the Brazos river, connecting Velasco and Freeport, Tex., hinges on whether or not the federal court will grant an application filed by George C. Morris, receiver of the Houston & Brazos Valley, to issue \$100,000 worth of receiver's certificates for the purpose. Plans for the structure provide for four 100-ft. and one 120-ft. spans to rest on five timber piers of creosoted piles 75 ft. long and on concrete abutments at the banks. It is estimated that the bridge will cost \$70,000, and it is hoped that bids may be received within about four weeks. **George C. Morris, receiver.**

JOLIET, ILL.—The Illinois Public Utilities Commission has issued an order requiring the Chicago & Alton and the Atchison, Topeka & Santa Fe to eliminate two grade crossings here and to realine their tracks. The improvement will involve an expenditure of approximately \$500,000. The Alton has been ordered to build a bridge at the Chicago street crossing, 900 ft. south of the city limits to Joliet, and to provide a subway for highway traffic. The Santa Fe has been ordered to erect bridges and to provide subways both at the Chicago street crossing and at the crossing of Patterson road and Brandon road. Both railroads have appealed to the Circuit Court and, failing to obtain relief there, will appeal to the Supreme Court.

MONTROSE, ONT.—The Michigan Central expects to expend about \$250,000 on a new roundhouse and accessories here some time this year. Plans have not yet been completed, and it is as yet uncertain whether the work will be done by contract or by the company's own forces.

NASHVILLE, TENN.—The Nashville, Chattanooga & St. Louis will start work at once on a new office building in Nashville. The structure is to be of brick construction, and the work will be carried out by company forces.

OAKLAND, CAL.—Preliminary steps to abolish two old swing bridges and erect bridges of the bascule type across Oakland's inner harbor, from Oakland to Alameda, have been taken by the chambers of commerce of Oakland, Berkeley and Alameda and by the city councils of the three municipalities. One of the existing bridges is used exclusively for the Southern Pacific suburban service and the other for all other traffic, including electric car lines.

SIBERIAN RAILWAY EXTENSION.—The construction of the Altai Railway, which connects Novonikolaievsk on the trans-Siberian with Semipalatinsk in the Steppes Provinces, passing through Barnaul, in the Tomsk Government of Siberia, has recently been opened to traffic. This railroad, 500 miles in length, will serve the richest agricultural and mineral regions of Siberia. The Altai region has deposits of gold, silver, lead, zinc and copper, which were worked in the eighteenth and nineteenth centuries, but afterwards abandoned owing to lack of transportation facilities and other causes.

Railway Financial News

CHICAGO, ROCK ISLAND & PACIFIC.—Judge Carpenter, under whose jurisdiction the Chicago, Rock Island & Pacific is in receivership, has authorized the receiver "to see to it that for the present, at least, there is no default in the interest on the first and refunding bonds." The following paragraphs are taken from the memorandum of Judge Carpenter in making this order:

"Counsel appearing for the Peabody protective committee, which, according to his statement in open court, by actual deposition and so-called 'adhesions' represents only approximately one-fourth of the first and refunding bonds, not only opposed the payment of the debenture interest, but stated that the first and refunding bondholders did not want their interest paid and that it would be better for all concerned if a default should be made thereon.

"Why he urges default in the payment of interest due his clients, he does not tell exactly. Considering, however, the equity behind the bonds, we will only surmise.

"The record shows that since the appointment of receivers there has been a great improvement in the property, and a marked improvement in the earnings. The net income for the present fiscal year is estimated to be approximately \$175,000, as compared with a deficit in the preceding year of \$734,000; and this notwithstanding a loss of approximately \$1,000,000 during the summer of 1915 on account of flood, and the making up of a large amount of deferred maintenance. The latter item on freight cars alone during the last six months amounted to \$400,000. In addition, there was deducted from the earnings of the first six months of the present fiscal year \$326,000 for rail and tie arbitrations which should have been charged against the operations of the previous fiscal year.

"Since the appointment of receivers, and up to December 31, 1915, there has been expended, in addition to making up deferred maintenance, \$2,281,000 for additions and betterments, all of which was expended upon property subject to the lien of the first and refunding mortgage."

ILLINOIS CENTRAL.—White, Weld & Co., New York, are offering \$3,257,000 Illinois Central collateral trust mortgage 4 per cent bonds, due November 1, 1953, at 86, yielding about 4.82 per cent on the investment. The total authorized and outstanding issue of these bonds is \$25,000,000, and they are secured by the deposit of \$32,489,276 underlying bonds (the total outstanding) on 798 miles of the Yazoo & Mississippi Valley, and are secured also by a supplemental mortgage on the same mileage. This is at the rate of \$31,400 per mile of road mortgaged. The bonds are a direct obligation of the Illinois Central.

ST. LOUIS & SAN FRANCISCO.—The situation in regard to reorganization is understood to be substantially as follows: An amended plan of reorganization was made public last month but has not been presented to the Missouri Public Service Commission, and there is therefore no plan before the commission, the former plan having been withdrawn, as previously announced in these columns. Hearings on the foreclosure sale are to take place the latter part of this week. No plan of reorganization will probably be presented to the Missouri commission until after a foreclosure order has been obtained.

PETROGRAD-ARCHANGEL SLEEPING CARS.—The International Sleeping Car Company is establishing a service of sleeping cars between Petrograd and Archangel.

RAILWAY CONSTRUCTION IN INDIA.—The South Indian Railway Administration will make surveys for a metre gage line from Jayankonda-Sholapuram to a point on the proposed Panruti-Trichinopoly Railway, as close as possible to Trichinopoly, on the north of the Coleroon, a distance of approximately 50 miles. This survey will be known as the Jayankonda-Sholapuram-Trichinopoly Railway Survey.